

**MINISTRY OF HEALTH OF UKRAINE
ODESSA NATIONAL MEDICAL UNIVERSITY**

Faculty : International

Department of Surgery №3

CONFIRMED by

Acting vice-rector for scientific and pedagogical work

Svitlana KOTIUSZHYNKA

September 1, 2022



RECOMMENDATIONS

For practical classes

Faculty : International , Year 5

Discipline "**Surgery with pediatric surgery**"

Recommendations are approved at the meeting of the Department of Surgery No. 3
Minutes No. 1 dated August 28, 2022.

The head of the department, professor

Volodimir BONDAR

Authors:

MD, Professor V. G. Bondar, MD, Professor Chetverikov S. G., MD, Professor O. F. Dzygal, MD, Associate Professor V. V. Kryzhaniivskii, PhD, MD, Associate Professor E. A. Kvasnevskii, PhD, MD, Associate Professor Chehlov M. V., PhD, MD, professor assistant Chaika M. O., PhD, professor assistant Ye. I. Kalimanov, professor assistant Varbanets V. O.

Practical class №1

Theme: " THORACIC TRAUMA. "

Goal:KNOW

1. Anatomy of the thorax.
2. Physiology of respiration.
3. Classification of thoracic trauma.
4. Pathological and anatomical features of thoracic trauma.
5. Methods of inspection of the patients with thoracic trauma.
6. Tool methods of inspection of the injured with thoracic trauma.
7. Tactics in the patient with thoracic trauma.
8. Tactics in the patient with associated trauma
9. Clinical presentations of thoracic organs damage.
10. Clinical presentations of thoracic trauma complications. The indications, terms and types of treatment.

Basic concepts: Chest injuries. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

5. Plan and organizational structure of the classes.

The main stages of the class, their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical recommendations, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level	Tasks Level 2, Level 3 tests,	

		Solutions to common clinical situation tasks	tasks Level 3	
1. Definition concept Chest injuries				
2. Clinical course	level 3			
3. Modern methods of Chest injuries				
Main stage				
To provide curation of patient with Chest injuries	level 3	Practical training	Case patients with IAS	40 min
Master methodological determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical and paraclinical investigations	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and practical skills they	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing Homework next session				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).
2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of Chest injuries.
- Classification of Chest injuries.
- Clinical manifestations of Chest injuries.
- Additional examination methods for Chest injuries.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.

«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

1. A teenage boy falls from his bicycle and is run over by a truck. On arrival in the emergency room, he is awake and alert and appears frightened but in no distress. The chest radiograph suggests an airfluid level in the left lower lung field and the nasogastric tube seems to coil upward into the left chest. The next best step in management is

- A. Placement of a left chest tube
- B. Immediate thoracotomy
- C. Immediate celiotomy
- D. Esophagogastrosocopy
- E. Removal and replacement of the nasogastric tube; diagnostic peritoneal lavage

Response

The answer is C. The finding of an airfluid level in the left lower chest with a nasogastric tube entering it after blunt trauma to the abdomen is diagnostic of diaphragmatic rupture with gastric herniation into the chest. This lesion needs to be fixed immediately.

With continuing negative pressure in the chest, each breath sucks more of the abdominal contents into the chest and increases the likelihood of vascular compromise of the herniated viscera. While the diaphragm is easily fixed from the left chest, this injury should be approached from the abdomen. The possibility of injury below the diaphragm after sufficient lung injury to rupture the diaphragm mandates examination of the intraabdominal solid and hollow viscera; adequate exposure of the diaphragm to allow secure repair is possible from this approach.

2. A 25-year-old woman arrives in the emergency room following an automobile accident. She is acutely dyspneic with a respiratory rate of 60 breaths/min. Breath sounds are markedly diminished on the right side. The first step in managing the patient should be to

- A. Take a chest x-ray
- B. Draw arterial blood for blood gas determination
- C. Decompress the right pleural space
- D. Perform pericardiocentesis
- E. Administer intravenous fluids

Response

The answers are C. Tension pneumothorax is a life-threatening problem requiring immediate treatment. A lung wound that behaves as a ball or flap valve allows escaped air to build up pressure in the intrapleural space. This causes collapse of the ipsilateral lung and shifting of the mediastinum and trachea to the contralateral side, in addition to compression of the vena cava and contralateral lung. Sudden death may ensue because of a decrease in cardiac output; hypoxemia; and ventricular arrhythmias. To accomplish rapid decompression of the pleural space, a large-gauge needle should be passed into the intrapleural cavity through the second intercostal space at the midclavicular line. This may be attached temporarily to an underwater seal with subsequent insertion of a chest tube after the life-threatening urgency has been relieved. Tension pneumothorax produces characteristic x-ray findings of ipsilateral lung collapse, mediastinal and tracheal shift, and compression of the contralateral lung. Occasionally, adhesions prevent complete lung collapse, but the tension pneumothorax is evident because of the mediastinal displacement. A pleural effusion would not be expected acutely in the absence of associated intrapleural blood.

3. 31-year-old man is brought to the emergency room following an automobile accident in which his chest struck the steering wheel. Examination reveals stable vital signs, but the patient exhibits multiple palpable rib fractures and paradoxical movement of the right side of the chest. Chest x-ray shows no evidence of pneumothorax or haemothorax, but a large pulmonary contusion is developing. Proper treatment would consist of which of the following?

- A. Tracheostomy, mechanical ventilation, and positive end-expiratory pressure
- B. Stabilization of the chest wall with sandbags
- C. Stabilization with towel clips
- D. Immediate operative stabilization
- E. No treatment unless signs of respiratory distress develop

Response

The answer is A. Flail chest is diagnosed in the presence of paradoxical respiratory movement in a portion of the chest wall. At least two fractures in each of three adjacent rib or costal cartilages are required to produce this condition. Complications of flail chest include segmental pulmonary hypoventilation with subsequent infection and ultimately respiratory failure. Management of flail chest should be individualized. If adequate pain control and pulmonary toilet can be provided, patients may be managed without stabilization of the flail. Often, intercostal nerve blocks and tracheostomy aid in this form of management. If stabilization is required, external methods such as sandbags or towel clips are no longer used. Surgical stabilization with wires is used if thoracotomy is to be performed for another indication. If this is not the case, “internal” stabilization is performed by placing the patient on mechanical ventilation with positive end-expiratory pressure.

Tracheostomy is recommended because these patients usually require 10–14 days to stabilize their flail segment and postventilation pulmonary toilet is simplified by tracheostomy. Indications for mechanical ventilation include significant impedance to ventilation by the flail segment, large pulmonary contusion, an uncooperative patient (e.g., owing to head injury), general anesthesia for another indication, more than five ribs fractured, and the development of respiratory failure.

4. A 60-year-old woman runs her car off the road and it hits a telephone pole. She presents to the emergency department with severe anterior chest pain and a blood pressure of 110/80.

A chest x-ray shows a questionably widened mediastinum. The next step in management should be which of the following?

- (A) transthoracic echocardiogram
- (B) pericardiocentesis
- (C) aortogram
- (D) central venous access line
- (E) computed tomography (CT) of chest

Explanation

(C) The most definitive test for aortic injury is the aortogram, even though only 20-30% patients with widened mediastinum will demonstrate it. A transthoracic echocardiogram does not image the aorta wall; however, a transesophageal echocardiogram may have more value in experienced hands.

5. An 18-year-old man presents to the emergency department with a gunshot wound to the left chest in the anterior axillary line in the seventh intercostal space. A rushing sound is audible during inspiration. Immediate management is which of the following?

- (A) exploratory laparotomy
- (B) exploratory thoracotomy
- (C) pleurocentesis
- (D) closure of the hole with sterile dressing
- (E) insertion of chest tube

Explanation

(D) The immediate treatment is the closure of the hole by any means available. Sucking chest wounds allow shift of the mediastinum to the opposite side. Thoracotomy is not usually required. Laparotomy is indicated for a gunshot wound below the fourth intercostal space, but it should follow respiratory stabilization. A chest tube will be required, following closure of the sucking wound, to prevent a tension pneumothorax.

6. A 25-year-old man is shot in the left lateral chest. In the emergency department, his blood pressure is 120/90, his pulse rate is 104 bpm, and his respiration rate is 36 breaths per minute. Chest x-ray shows air and fluid in the left pleural cavity. Nasogastric aspiration reveals blood-stained fluid. What is the best step to rule out esophageal injury?

- (A) insertion of chest tube
- (B) insertion of nasogastric tube
- (C) Esophagogram with gastrografin
- (D) esophagoscopy
- (E) peritoneal lavage

Explanation

(D) Either an esophagoscopy or a barium swallow-or both-can be used to rule out esophageal injury. The esophagogram should not be performed with Gastrografin because of its deleterious effects if aspirated into the lungs. Nasogastric tube aspiration showing blood is suggestive of an esophageal injury in this patient but is not specific. Peritoneal lavage is sensitive for an intra-abdominal injury, causing bleeding.

7. A 32-year-old female falls from the 10th floor of her apartment building in an apparent suicide attempt. Upon presentation, the patient has obvious head and extremity injuries. Primary survey reveals that the patient is totally apneic. By which method is the immediate need for a definitive airway in this patient best provided?

- (A) orotracheal intubation
- (B) nasotracheal intubation
- (C) percutaneous cricothyroidotomy
- (D) intubation over a bronchoscope
- (E) needle cricothyroidotomy

Explanation

(A) In a patient with significant blunt mechanism of injury and head injury, the cervical spine should be protected against further injury. In an apneic patient with the potential for cervical spine injury, oro tracheal intubation may be attempted with in-line stabilization of the neck. If this is unsuccessful, percutaneous cricothyroidotomy is the best definitive step.

8. A 70-year-old man is brought into the emergency department following his injury as a passenger in a car crash. He complains of right side chest pain. Physical examination reveals a respiratory rate of 42 breaths per minute and multiple broken ribs of a segment of the chest wall that moves paradoxically with respiration. What should the next step be?

- (A) tube thoracostomy
- (B) tracheostomy
- (C) thoracentesis
- (D) endotracheal intubation
- (E) intercostal nerve blocks

Explanation

(C) Thoracentesis should be performed first to rule out a tension pneumothorax or hemothorax. However, if the patient does not respond rapidly, early endotracheal intubation is necessary for patients with a flail segment of the chest wall. Intercostal nerve blocks and other means to control pain are important but should be performed after respiratory problems have been brought under control.

9. A 26-year-old man is stabbed in the right intercostal space in the midclavicular line and presents to the emergency department. On examination, subcutaneous emphysema of the right chest wall, absent breath sounds, and a trachea shifted to the left are noted. What is the most likely serious diagnosis?

- (A) pneumothorax
- (B) tension pneumothorax
- (C) massive hemothorax
- (D) hemopneumothorax
- (E) chest wall laceration

Explanation

(B) Shift of the trachea strongly suggests a tension pneumothorax. Subcutaneous emphysema is also more common with a tension pneumothorax than with the other conditions listed. Simple pneumothorax and chest wall laceration are much less serious injuries than tension pneumothorax.

10. A 31-year-old man is shot in the back of the left chest, and a bullet exits the left anterior chest. The patient's blood pressure is 130/90, his respiration rate is 28 breaths per minute, and his pulse is 110 bpm. A chest x-ray reveals hemothorax. A chest tube is inserted and yields 800 mL of blood; the 1st- and 2nd-hour drainage is 200 mL/h and 240 mL/h, respectively. Which is the next step in management?

- (A) place a second chest tube
- (B) collect the blood for autotransfusion
- (C) transfuse and observe drainage for another hour
- (D) insert a Swan-Ganz catheter
- (E) perform a left thoracotomy

Explanation

(E) A patient bleeding at a rate of more than 200 mL per hour should have an emergency thoracotomy. Autotransfusion of blood collected through chest tube should be considered for lesser degree of bleeding but is less reliable to succeed if bleeding does not decrease.

11. A 31-year-old man is shot in the back of the left chest, and a bullet exits the left anterior chest. The patient's blood pressure is 130/90, his respiration rate is 28 breaths per minute, and his pulse is 110 bpm. A chest x-ray reveals hemothorax. A chest tube is inserted and yields 800 mL of blood; the 1st- and 2nd-hour drainage is 200 mL/h and 240 mL/h, respectively. The most likely cause of the bleeding in the patient is injury to which of the following?

- (A) pulmonary artery
- (B) lung parenchyma
- (C) internal thoracic (mammary) and/ or intercostal arteries
- (D) pulmonary vein
- (E) left atrium

Explanation

(C) Bleeding that is sufficient to require thoracotomy usually comes from vessels in the systemic circulation, particularly the internal thoracic (mammary) and intercostal arteries.

12. A 40-year-old woman is brought to the emergency department following a car crash in which she was the driver. In the emergency department, her blood pressure is 80/60 mmHg, her pulse is 128 bpm, and her respiratory rate is 32 breaths per minute. She complains of right lower chest wall and severe right upper quadrant (RUQ) tenderness. Her breath sounds are questionably diminished. The immediate priority is to perform which of the following?

- (A) peritoneal lavage
- (B) chest x-ray
- (C) CT scan of chest and abdomen
- (D) thoracentesis with an 18-gauge needle
- (E) endotracheal intubation

Explanation

(D) In a patient with respiratory distress and shock, adequate breathing is of higher priority than circulation. Insertion of an 18-gauge needle to rule out and/or treat a pneumothorax takes precedence over diagnostic tests.

13. A 31-year-old man is brought to the emergency room following an automobile accident in which his chest struck the steering wheel. Examination reveals stable vital signs, but the patient exhibits multiple palpable rib fractures and paradoxical movement of the right side of the chest. Chest x-ray shows no evidence of pneumothorax or hemothorax, but a large pulmonary contusion is developing. Proper treatment would consist of which of the following?

- a. Tracheostomy, mechanical ventilation, and positive end-expiratory pressure
- b. Stabilization of the chest wall with sandbags
- c. Stabilization with towel clips
- d. Immediate operative stabilization
- e. No treatment unless signs of respiratory distress develop

Explanation

The answer is **a**. (Schwartz, 7/e, pp 688–689.) Flail chest is diagnosed in the presence of paradoxical respiratory movement in a portion of the chest wall. At least two fractures in each of three adjacent rib or costal cartilages are required to produce this condition. Complications of flail chest include segmental pulmonary hypoventilation with subsequent infection and ultimately respiratory failure. Management of flail chest should be individualized. If adequate pain control and pulmonary toilet can be provided, patients may be managed without stabilization of the flail. Often, intercostal nerve blocks and tracheostomy aid in this form of management. If stabilization is required, external methods such as sandbags or towel clips are no longer used. Surgical stabilization with wires is used if thoracotomy is to be performed for another indication. If this is not the case, “internal” stabilization is performed by placing the patient on mechanical ventilation with positive end-expiratory pressure. Tracheostomy is recommended because these patients usually require 10–14 days to stabilize their flail segment and postventilation pulmonary toilet is simplified by tracheostomy. Indications for mechanical ventilation include significant impedance to ventilation by the flail segment, large pulmonary contusion, an uncooperative patient (e.g., owing to head injury), general anesthesia for another indication, more than five ribs fractured, and the development of respiratory failure.

Algorithm for Management of chest trauma

Management of chest trauma can be divided into three distinct levels of care; pre-hospital trauma life support, in-hospital or emergency room trauma life support and surgical trauma life support. At each level of care recognition of thoracic injury is crucial for the later outcome. Initial resuscitation and management of chest trauma patient is based upon protocols from the Advanced Trauma Life Support (ATLS)). After a primary survey immediately life-threatening injuries should be excluded or treated such as:

- I. Airway obstruction;
- II. Tension pneumothorax;
- III. Open pneumothorax;
- IV. Massive haemothorax;
- V. Flail chest;
- VI. Cardiac tamponade.

Secondary survey will provide information on potentially life-threatening injuries:

- I. Pulmonary contusion;
- II. Myocardial contusion;
- III. Aortic disruption;
- IV. Traumatic diaphragmatic rupture;
- V. Tracheobronchial disruption;
- VI. Oesophageal disruption.

The German Trauma Registry DGU[®] included 873 chest trauma patients between 1993 and 2008, of these 60% had an AIS (serious) score ≥ 3 , expressing once again the potential severity of chest trauma. Nevertheless, thoracic surgeons are not part of the initial emergency room trauma team in level I trauma centres in Germany). In North America, the thoracic surgeon is present in 1 out of 16 level I trauma centres. This is due to the distribution of injuries, many of which do not require the specific knowledge of a thoracic surgeon in every patient. Kulshrestha *et al.* showed that diagnosis made in 1,359 chest trauma patients was in 49% 1–2 rib fractures, 20% pneumothorax, 12% lung contusion and 6% thoracic vascular injury. Treatment was in 18% a chest tube. Thoracic surgical intervention in the emergency room or operating theatre was necessary in only 2.6%. Mortality was 9.4% of which 56% in the first 24 hours. This paper demonstrates exactly why thoracic surgeons are seldom part of the trauma team in the emergency room. The very specific experience of thoracic surgeons, when available, should part of the extended trauma team. Many deaths can be prevented by prompt diagnosis and treatment coupled with an understanding of pathophysiologic factors associated with thoracic trauma.

In 2016, the German S3 guideline on treatment of polytrauma/severe injuries was revised involving representatives of all disciplines. With regards to chest trauma the several points were stressed, according to the recent available literature, for the three levels of trauma care.

Pre-hospital trauma life support

Assessment of breathing and clinical examination of the thorax (respiratory movements and quality of respiration) are necessary to recognize major thoracic injuries such as tension pneumothorax, open pneumothorax, fail chest, pulmonary contusion and massive haemothorax. Inspection, palpation, percussion and especially auscultation [sensitivity 90%, specificity 98%] will provide information as to whether a tension pneumothorax is present. Clinical diagnosis of pneumothorax, may require immediate intervention, by initial needle decompression of the pleura space. Should this not be successful or there is evidence of pneumothorax, chest tube drainage is necessary. In the absence of hypoventilation on auscultation, or thoracic pain in a stable patient a major tension pneumothorax can be ruled out. Repeated examination is mandatory to avoid omission of progression of a pneumothorax. As tension pneumothorax is the most frequent reversible cause of death in trauma patients with cardiac arrest.

Emergency room trauma life support

Repetition of clinical examination in primary survey together with anamnestic information on the mechanism of thoracic trauma will provide information on potential severity of thoracic injury. When the extent of trauma cannot be defined it is recommended to perform contrast-enhanced CT scan. As the sensitivity of a chest X-ray in the emergency room is only 58.3%. Thoracic ultrasound examination is valid when CT scan is not necessary, in comparison with chest X-ray it shows equivalent sensitivity and specificity for diagnosis of pneumothorax. Ultrasonography in the emergency room is also a reliable method to exclude pleural/pericardial effusion. Chest tube drainage is necessary when pneumothorax is relevant, progressive or when the patient is mechanically ventilated. Large bore chest tubes compared with smaller chest tube) have no advantage in treatment of severely injured patients.

When should the thoracic surgeon definitely be involved?

According to the ATLS guideline this is recommended as follows:

- I. Blood loss over the chest TD >1,500 mL initially or >200 mL/hour over 2–4 hours;
- II. Haemoptysis;
- III. Massive subcutaneous emphysema;
- IV. Important air-leakage over the chest tub;
- V. Uncertain images on the chest X-ray or CT thorax;
- VI. Penetrating chest trauma.

Indications for an immediate thoracic surgical intervention are:

- I. Blood loss \geq 1,500 mL initially/>200 mL/hour over 2–4 hours;
- II. Endobronchial blood loss; massive contusion with significant impairment of mechanical ventilation;
- III. Tracheobronchial tree injury (air-leakage/hemothorax);
- IV. Injury of the heart or large vessels (blood loss/pericardial tamponade).

Surgical trauma life support

Which incision should be chosen for emergency thoracic surgical intervention? Anterolateral thoracotomy in the 4–6th intercostal space is usually recommended, although in 20% of the patients it is insufficient to visualize all lesions and must therefore be modified. Clamshell (transverse sternotomy and bilateral anterolateral thoracotomy) or hemi-clamshell (longitudinal sternotomy and anterolateral thoracotomy) will permit better exposition of thoracic organs. The necessity for emergency room thoracotomy is extremely rare, anterolateral thoracotomy will permit a potentially lifesaving measure (clamping of a great vessel) in an extreme situation before proceeding to the operating theatre.

The role of minimal invasive surgery in management of chest trauma should not be under- or overestimated. The amount of randomized prospective data for video-assisted thoracoscopic surgery (VATS) management in chest-trauma patient is very sparse. Nevertheless the on-going acceptance and use of VATS for major thoracic resections has led to advanced techniques for management of major bleedings in the elective-surgery-patient. VATS as a procedure for pleural space management in the non-critical, non-massive-transfusion patients can be of great assistance. Its value in persistent non-major-vessel-bleeding haemothorax in terms of pleural space debridement is undisputable. In some cases VATS is considered to be related to lower ARDS-rates in comparison to open thoracotomy patients, whereby an obvious bias for the non-massive-injury-patients exist. Yu *et al.* demonstrated in 2016 a small series of VATS-treated patients with penetrating thoracic trauma. In all cases, the patients were haemodynamically stable and no major intrapericardial vessels were found. Even though major lung or intercostal injuries were documented, all patients could be treated successfully through minimal invasive surgery techniques. Jin *et al.* could prove a significant advantage for stable thoracic trauma patients treated through VATS in a randomized trial vs. open thoracotomy. Video-assisted thoracoscopy is also a useful explorative and eventually therapeutic tool for diaphragmatic lesions. Traumatic diaphragmatic lesions are more common than believed and can be misdiagnosed very easily, thus leading to delayed complications). A thoracoscopic evaluation of the pleural cavity can demonstrate easily misdiagnosed lesions and treat a possible persisting haemothorax. It is obvious that VATS can play a role in the treatment of chest trauma management so long the inclusion criteria are respected. In a haemodynamic unstable

patient with severe chest wall or cardiac vessels injuries and massive transfusion there is no place for thoracoscopic efforts that only delay the unavoidable open approach and perhaps minimize the chances for a positive outcome. But in the stable haemodynamic state with small perforating wounds, VATS can be a valuable weapon of thoracic surgeons for fast recovery, minimized pain and perfect visualization of the entire pleural space. Indications for such an approach are as followed:

Indications for VATS in severely injured patients:

- I. (Penetrating) injury with little blood loss in a stable patient;
- II. Persistent hemothorax;
- III. Empyema;
- IV. Persistent air-leakage;
- V. Suspicion of diaphragmatic rupture.

4. Summing-up

5. Recommended reading:

Basic:

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
6. SEIDEL’S GUIDE TO PHYSICAL EXAMINATION: AN INTERPROFESSIONAL APPROACH. Copyright © 2019 by Elsevier, Inc.
7. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія: Підручник для мед. ун-тів, інст., акад. Рекомендовано Вченою радою Буковинського НМУ / О.М. Слободян, В.Ю. Єршов, Г.Ю. Костюк, В.І. Півторак; за ред. В.Ю. Єршова. — К., 2018. 504 с.

Additional:

8. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
9. Schwartz's Principles Of Surgery– 2014 by [F. Charles Brunicaardi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), [& 2 More](#)

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров’я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)

3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners/> - Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №2

Theme: " Purulent diseases of lungs and pleura. "

Goal:

Know:

Modern views on the etiology and pathogenesis of purulent diseases of lungs and pleura. Classification. Clinical and instrumental examination of patients. Differential diagnosis. Indications. Indications and methods of surgical interventions. Postoperative management of patients. Possible postoperative complications. The examination of capacity of patients.

5. Plan and organizational structure of the classes.

The main stages of occupation of their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control%	Duration in minutes
Preparatory stage				
organization of classes	level 2		Methodical development, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2 and 3 level Solutions to common non-clinical and situational problems	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept purulent diseases of lungs and pleura				
2. Clinical course	level 3			
3. Modern methods of				

diagnosis purulent diseases of lungs and pleura				
4. Methods of surgical treatment	level 3			
main Stage				
To provide curation of patient purulent diseases of lungs and pleura	level 3	Practical training	Case patients with arterial thrombosis, embolism and occlusive vascular disease	40 min
Master methodological wild determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical and paraclinical objective examination of the patient	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and practical skills they	level 3	Decision custom tasks	Test case studies of 3	15 min
Summary				
Homework next session				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of purulent diseases of lungs and pleura.
- Classification of purulent diseases of lungs and pleura.
- Clinical manifestations of purulent diseases of lungs and pleura.
- Additional examination methods for purulent diseases of lungs and pleura.
- Conservative treatment
- Surgical treatment.

- requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the

	discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

3. clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

1. A 42-year-old homeless man presents with a 3-week history of shortness of breath, fevers, and pleuritic chest pain. Chest x-ray (CXR) reveals a large left pleural effusion. Thoracentesis reveals thick, purulent-appearing fluid, which is found to have glucose less than 40 mg/dL and a pH of 6.5. A chest tube is placed, but the pleural effusion persists. Which of the following is the most appropriate management of this patient?
 - a. Placement of a second chest tube at the bedside and antibiotic therapy
 - b. Infusion of antibiotics via the chest tube
 - c. Intravenous antibiotics for 6 weeks
 - d. Thoracotomy with instillation of antibiotics into the pleural space
 - e. Thoracotomy with decortication and antibiotic therapy

Explanation

The answer is **e.** (Mulholland, p 1414.) The patient has an empyema or the accumulation of pus in the pleural cavity. Based on the history (3 weeks of symptoms) and the fluid analysis demonstrating a glucose level less than 40 mg/dL and a pH less than 7.0 and its thick consistency, the patient's empyema is in the most advanced stage or the chronic organizing phase. In this phase, the fluid collection is loculated and depositions of fibrin create a thick pleural rind, which prevents apposition of the lung to the parietal pleura. Reexpansion of the lung requires thoracotomy with decortication to remove the purulent fluid and the pleural rind. Antibiotic therapy tailored to the organism(s) identified is necessary but not sufficient to treat an empyema

2. A 63-year-old woman with chronic obstructive pulmonary disease (COPD) presents with a several-week history of fever, night sweats, weight loss, and cough. Her CXR is noted to have a density in the left upper lobe with a relatively thin-walled cavity. Bronchoscopy and computed tomographic (CT) scan are suggestive of a lung abscess rather than a malignant process. Which of the following is the most appropriate initial management of this patient?
 - a. Percutaneous drainage of the lung abscess
 - b. Systemic antibiotics directed against the causative agent
 - c. Tube thoracostomy
 - d. Left upper lobectomy
 - e. Surgical drainage of the abscess

Explanation

The answer is **b.** (Brunicardi, pp 541-551.) Initial treatment of a lung abscess, once the diagnosis has been made, is systemic antibiotics directed against the causative agent. The duration of therapy is dependent on the severity of the underlying pneumonia that resulted in the abscess and can last up to 12 weeks. Often, the abscess drains spontaneously via the

tracheobronchial tree, but, if it fails to resolve with medical therapy, intervention may be required, ranging from percutaneous to surgical drainage of the abscess or resectional therapy.

3.

A 70-year-old patient on antibiotic therapy for necrotizing bacterial pneumonia is found to have a large pleural effusion. A sample of fluid is cloudy and thick, with a pH of 7.2. What should be the next therapeutic step?

- A) Continued antibiotics based on Gram-staining, culture, and sensitivity
- B) Thoracotomy and decortication
- C) Rib resection drainage
- D) Chest tube drainage
- E) Repeat thoracentesis

Explanation

D/

The patient developing a pleural effusion in the setting of an underlying pneumonia requires thoracentesis for diagnosis. The character of the fluid described is consistent with that present in an empyema. Initial treatment of an empyema should involve closed chest-tube drainage. Thoracotomy and decortication, or rib resection may be required when the empyema is not adequately drained by the chest tube or is otherwise not amenable to closed drainage.

4.

A patient undergoes a left scalene node biopsy to rule out carcinoma of the lung. One hour later the patient is cyanotic and dyspneic; a marked tachycardia is accompanied by decreased breath sounds on the left. Which step is most likely to improve the patient's condition?

- A) Re-exploration of the wound
- B) Insertion of a left chest tube
- C) Insertion of a right subclavian catheter and administration of intravenous fluids
- D) Blood transfusion
- E) Endotracheal intubation

Explanation

Insertion of a left chest tube is most likely to improve the patient's condition. The pleura of the lung lies immediately adjacent to the scalene fat pad. If the pleura is injured during scalene node biopsy, a resultant pneumothorax can cause the symptoms that developed in the patient described. Scalene node biopsy can also injure other nearby structures; for example, lymph duct structures, the brachial plexus, the vagus and phrenic nerves, and the subclavian vessels, resulting in corresponding symptoms.

A large wound hematoma could cause tracheal compression and airway compromise, but this is not described. Intubation with positive pressure ventilation will make the pneumothorax worse without a chest tube. While injury to the subclavian vessels could cause a hemothorax, a chest tube still needs to be inserted for evaluation. A pneumothorax is the more likely injury. With a suspected left-sided pneumothorax, a subclavian line should be inserted

5. A 40-year-old man slept within 4-5 hours in the street after alcohol intake. 2 days later his body temperature gradually increased to 39°C and pains appeared in the chest. Over 2 weeks 200 ml of pus with unpleasant smell suddenly discharged during cough. Establish initial diagnosis.

- A. Acute lung abscess
- B. Bronchiectasia
- C. Pleurisy
- D. Exacerbation of chronic bronchitis

E. Lung cancer with pneumonitis development

Orientation map on the theme

Task	Directions	Note
Etiology	Call the main etiological factors of acute purulent diseases of lungs and pleura.	
Clinic	To make the classification of clinical manifestations of acute purulent diseases of lungs and pleura.	
Diagnostics	Writing a list of the main methods for diagnosis of acute purulent diseases of lungs and pleura.	
Differential diagnosis	Complete table of differential diagnosis of acute purulent diseases of lungs and pleura.	
Master:		
Methods of examination of patients 3 purulent diseases of lungs and pleura.	Take the history; Conduct an objective examination of the patient; Laboratory examination of the patient; Additional instrumental inspection of patient; Radiographic examination.	
3To provide patients examination	To chart the treatment of patients with purulent diseases of lungs and pleura; Sam conservative therapy; Identify indications and contraindications for surgical treatment; Identify the method of anesthesia, the degree of operational risk; Determine the volume of surgical treatment; Identify indications and contraindications for drainage of pleural cavity; To chart a patient in the postoperative period; Identify prevention of purulent diseases of lungs and pleura.	

4. Summing-up**5. Literature:****Basic:**

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
6. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія: Підручник для мед. ун-тів, інст., акад. Рекомендовано Вченою радою Буковинського НМУ / О.М. Слободян, В.Ю. Єршов, Г.Ю. Костюк, В.І. Півторак; за ред. В.Ю. Єршова. — К., 2018. — 504 с.
7. James Chalmers, Eva Polverino, Stefano Aliberti//Bronchiectasis. 2018

Additional:

1. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
2. Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicardi](#) (Author), [DanaK. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), & 2 More

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners>- Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №3

Theme: " Diseases of mediastinum. "

Goal: to familiarize with modern determination of diagnostics and treatment of patients with the tumours of mediastinum.

1. To familiarize with contribution of domestic scientists in the study of problem of diagnostics and treatment of patients with the tumours of mediastinum.
2. Able to explain to the patients the necessity of prophylactic roentgenologic examination of thoracic organs and timely address to the specialized hospital.

-to know:

1. Basic clinical symptoms of tumours of lungs.
2. Basic clinical symptoms of tumours of mediastinum.
3. Symptoms of “small signs”.
4. Classification of tumours of mediastinum.

Basic concepts: Diseases of the mediasninum. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;**Plan and organizational structure of the classes.**

The main stages of the class, their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical recommendations, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level Solutions to common clinical situation tasks	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept Diseases of the mediansinum				
2. Clinical course	level 3			
3. Modern methods of Diseases of the mediansinum				
Main stage				
To provide curation of patient with Diseases of the mediansinum	level 3	Practical training	Case patients with IAS	40 min
Master methodological determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical and paraclinical investigations	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and practical skills they	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing Homework next session				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).
2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of Diseases of the mediastinum.
- Classification of Diseases of the mediastinum.
- Clinical manifestations of Diseases of the mediastinum.
- Additional examination methods for Diseases of the mediastinum.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

1. A 42-year-old man has been admitted with frank subcutaneous emphysema in the upper half of the trunk, breathlessness and tachycardia in 3 hours after trauma. Pulse rate: 120/min. The X-ray didn't reveal pneumothorax; the mediastinum is considerably expanded to both sides. What urgent management will consists of?
 - A. Puncture of pleural cavity
 - B. Drainage of the anterior mediastinum
 - C. Drainage of pleural cavity
 - D. Thoracoscopy
 - E. Thoracotomy

2. In a 30-year-old man who has got a closed trauma of the thoracic cage, the general state is heavy. Cyanosis, dyspnoea, disorders of phonation and subcutaneous emphysema on the neck is being noticed. P: 100/min; BP: 80/40 mm Hg. The X-ray of the thoracic cage revealed collapse of the right lung and a horizontal fluid level up to 5th rib and mediastinal shadow expansion. Which diagnosis can be established to the patient?
 - A. Massive rupture of the lung
 - B. Injury of the oesophagus
 - C. Abruption of main bronchus
 - D. Lung crush
 - E. Contusion of the heart

3. The basic clinical sign of exudative pericarditis is:
- Right-ventricle heart failure
 - Left-ventricle heart failure
 - Intoxication
 - Respiratory failure
 - Acrocyanosis
4. In a patient with post-burn stenosis of the oesophagus a fever, tachycardia, pains behind the breastbone appeared after the latest bougieunage. The X-ray reveals a horizontal fluid level in the posterior mediastinum. The diagnosis.
- Diverticulum of the oesophagus
 - Acute anterior mediastinitis.
 - Acute posterior mediastinitis.
 - Acute empyema of pleura.
 - Paraoesophageal hernia.
5. A 28-year-old woman who has been admitted to the surgical department has clinical signs of superficial neck phlegmon. Which complications can cause the given pathology?
- Mediastinitis
 - Transition of acute strumitis in chronic
 - Asphyxia
 - Thrombophlebitis
 - Mandibular periostitis
6. A 56-year-old woman was treated for 3 years for wheezing on exertion, which was diagnosed as asthma. The chest radiograph below is obtained, which reveals a midline mass compressing the trachea. The most likely diagnosis is



- Lymphoma
- Neurogenic tumor
- Lung carcinoma
- Goiter
- Pericardial cyst

Explanation

The answer is **d.** (Schwartz, 7/e, pp 771–780.) The boundaries of the mediastinum are the thoracic inlet, the diaphragm, the sternum, the vertebral column, and the pleura bilaterally. The mediastinum itself is divided into three portions delineated by the pericardial sac: the anterosuperior and posterosuperior regions are in front of and behind the sac, respectively,

while the middle region designates the contents of the pericardium. Mediastinal masses occur most frequently in the anterosuperior region (54%) and less often in the posterosuperior (26%) and middle (20%) regions. Cysts (either pericardial, bronchogenic, or enteric) are the most common tumors of the middle region; neurogenic tumors are the most common (40%) of the primary tumors of the posterior mediastinum. The primary neoplasms of the mediastinum in the anteroposterior region are thymomas (31%), lymphomas (23%), and germ-cell tumors (17%). More commonly, though, a mass in this area represents the substernal extension of a benign substernal goiter. Diagnosis may be made by visualization of an enhancing structure on CT; radioactive iodine scanning is useful in management because it may make the diagnosis if the mediastinal tissue is functional and will also document the presence of functioning cervical thyroid tissue to prevent removal of all functional thyroid tissue during mediastinal excision.

7.

A 22-year-old female is referred for evaluation of a 2 cm posterior mediastinal mass discovered on routine chest radiograph. What is the most likely diagnosis?

- A) Thymoma
- B) Neurogenic tumor
- C) Adenocarcinoma
- D) Bronchogenic cyst
- E) Lymphoma

Explanation

The most common posterior mediastinal mass is a neurogenic tumor. 75% of neurogenic tumors occur in children under 4 years of age. Childhood tumors are more likely to be malignant. Lymphoma, thymoma, and germ cell tumors are commonly located in the anterior mediastinum. Middle mediastinal lesions include bronchogenic and pericardial cysts. Metastatic adenocarcinoma may involve the pleural surfaces; however, lesions are often small and multiple.

4. Summing-up

5. Literature:

Basic:

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Березницький Я. С. (за ред.)General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020

6. The Bethesda handbook of clinical oncology / editors, Jame Abraham, James L. Gulley.
Fifth Edition. Copyright © 2019 Wolters Kluwer
7. SEIDEL'S GUIDE TO PHYSICAL EXAMINATION: AN INTERPROFESSIONAL APPROACH. Copyright © 2019 by Elsevier, Inc.

Additional:

8. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
9. Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaudi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), & 2 More

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners-> Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №4

Theme: " Oesophageal diseases and trauma of the oesophagus. "

Goal: Acquaint applicants with mechanisms of formation diverticula of the oesophagus, cardiac achlasia, burns of the oesophagus, anatomy of mediastinum.

Acquaint applicants with symptomatology, diagnostics, differential diagnosis and details of treatment of diaphragmatic herniae and diaphragm eventration. Recall knowledge on topographical anatomy of the abdominal cavity and topography of the diaphragm, its vessels and nerves.

To know:

1. Special methods of research of the oesophagus.
2. Clinics, diagnostics and treatments of traumas of the oesophagus.
3. Clinics, diagnostics and principles of treatment of cardiac achalasia.
4. Clinics, diagnostics and principles of treatment of diverticula of the oesophagus.
5. Clinics, diagnostics and methods of treatment of burns of the oesophagus.
6. Contemporary representations about diagnostics and medical tactics in diaphragmatic herniae and diaphragm eventration
7. The basic complaints of the patients with diaphragmatic herniae and diaphragm eventration.
8. The indications for surgical treatment.

9. Complications of diaphragmatic herniae and diaphragm eventration.
10. Anatomical structure of the mediastinum.
11. Clinics, diagnostics and treatment of acute mediastinitis.
12. Clinics, diagnostics and treatment of chronic mediastinitis.
13. Diagnostics and treatment of thymoid formations of the mediastinum.
14. Diagnostics of neurogenic, mesenchymal tumours of the mediastinum.
15. Diagnostics of thymomas and cysts of the mediastinum.
16. Methods of surgical treatment of diseases of the mediastinum

Basic concepts: mesenteric ischemia. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure of the class.

The main stages of occupation of their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control%	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical development, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2 and 3 level Solutions to common non-clinical and situational problems	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept oesophageal diseases				
2. Clinical course	level 3			
3. Modern methods of oesophageal diseases				
4. Methods of surgical treatment	level 3			
main Stage				

To provide curation of patient oesophageal diseases	level 3	Practical training	Case patients with oesophageal diseases	40 min
Master methodological determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
To capture the methods of clinical researchers of the patient	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
The control and correction of knowledge and practical skills they	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing				
Homework next session				1 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of diseases of the oesophagus.
- Classification of diseases of the oesophagus.
- Clinical manifestations of diseases of the oesophagus.
- Additional examination methods for diseases of the oesophagus.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

DIRECTIONS: Each item below contains a question or incomplete statement followed by suggested responses. Select the one best response to each question.

1. A 56-year-old woman was treated for 3 years for wheezing on exertion, which was diagnosed as asthma. The chest radiograph below is obtained, which reveals a midline mass compressing the trachea. The most likely diagnosis is
 - A. Lymphoma
 - B. Neurogenic tumor
 - C. Lung carcinoma
 - D. Goiter
 - E. Pericardial cyst

Explanation

The answer is **D**. The boundaries of the mediastinum are the thoracic inlet, the diaphragm, the sternum, the vertebral column, and the pleura bilaterally. The mediastinum itself is divided into three portions delineated by the pericardial sac: the anterosuperior and posterosuperior regions are in front of and behind the sac, respectively, while the middle region designates the contents of the pericardium.

Mediastinal masses occur most frequently in the anterosuperior region (54%) and less often in the posterosuperior (26%) and middle (20%) regions. Cysts (either pericardial, bronchogenic, or enteric) are the most common tumors of the middle region; neurogenic tumors are the most common (40%) of the primary tumors of the posterior mediastinum. The primary neoplasms of the mediastinum in the anteroposterior region are thymomas (31%), lymphomas (23%), and germ-cell tumors (17%).

More commonly, though, a mass in this area represents the substernal extension of a benign substernal goiter. Diagnosis may be made by visualization of an enhancing structure on CT; radioactive iodine scanning is useful in management because it may make the diagnosis if the mediastinal tissue is functional .

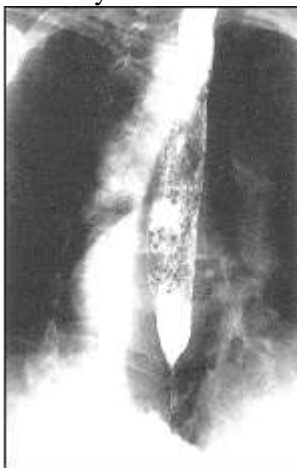
2. A 42-year-old man has been admitted with frank subcutaneous emphysema in the upper half of the trunk, breathlessness and tachycardia in 3 hours after trauma. Pulse rate: 120/min. The X-ray didn't reveal pneumothorax; the mediastinum is considerably expanded to both sides. What urgent management will consists of?
 - A. Puncture of pleural cavity
 - B. Drainage of the anterior mediastinum
 - C. Drainage of pleural cavity
 - D. Thoracoscopy
 - E. Thoracotomy
3. In a 30-year-old man who has got a closed trauma of the thoracic cage, the general state is heavy. Cyanosis, dyspnoea, disorders of phonation and subcutaneous emphysema on the neck is being noticed. P: 100/min; BP: 80/40 mm Hg. The X-ray of the thoracic cage revealed collapse of the right lung and a horizontal fluid level up to 5th rib and mediastinal shadow expansion. Which diagnosis can be established to the patient?
 - A. Massive rupture of the lung
 - B. Injury of the oesophagus
 - C. Abruption of main bronchus
 - D. Lung crush
 - E. Contusion of the heart
4. The basic clinical sign of exudative pericarditis is:
 - A. Right-ventricle heart failure
 - B. Left-ventricle heart failure
 - C. Intoxication
 - D. Respiratory failure
 - E. Acrocyanosis
5. In a patient with post-burn stenosis of the oesophagus a fever, tachycardia, pains behind the breastbone appeared after the latest bougieunage. The X-ray reveals a horizontal fluid level in the posterior mediastinum. The diagnosis.
 - A. Diverticulum of the oesophagus
 - B. Acute anterior mediastinitis.
 - C. Acute posterior mediastinitis.

- D. Acute empyema of pleura.
- E. Paraoesophageal hernia.

6. A 28-year-old woman who has been admitted to the surgical department has clinical signs of superficial neck phlegmon. Which complications can cause the given pathology?

- A. Mediastinitis
- B. Transition of acute strumitis in chronic
- C. Asphyxia
- D. Thrombophlebitis
- E. Mandibular periostitis

7. A 32-year-old woman presents with a chief complaint of difficulty swallowing. Her dysphagia has become gradually worse over the last 6 months and is equal for solids and liquids. She also mentions bouts of severe chest pain when drinking ice water. She denies heartburn, fever, exertional chest pain, and dyspnoea, but does admit to a 5-pound weight loss during the last 6 month, primarily due to eating less because of the difficulty and chest pain she has when attempting to eat. She also mentions occasional regurgitation of undigested food when she lies down to go to sleep at night. The physical exam is unremarkable. T: 36,6⁰C; BP: 110/70; RR: 12/min; P: 62/min. Tests: HB: 140g/L; WBC's: 7300/ μ L; ESR: 8 mm/h; EKG: normal sinus rhythm with no abnormalities. Barium swallow: see figure. Establish diagnosis.



- A. Achalasia of the oesophagus
- B. Diverticulum of the oesophagus
- C. Chalasia of the oesophagus
- D. Cancer of the oesophagus
- E. Foreign body in the oesophagus

Explanation

Fig. Barium swallow in a patient with achalasia. Retained food, moderate oesophageal dilatation, and bird's beak deformity of distal oesophagus. Classic symptoms include dysphagia for both solids and liquids, atypical chest pain (which may be precipitated by cold liquids or swallowing), regurgitation of undigested food (classically at night while lying down), and weight loss (patients eat less because eating is difficult).

8. A 41-year-old man complains of regurgitation of saliva and of ingested but undigested food. An esophagram reveals a "bird's beak" deformity. Which of the following statements is true about this condition?

- A. Chest pain is common in the advanced stages of this disease
- B. More patients are improved by forceful dilation than by surgical intervention
- C. Manometry can be expected to show high resting pressures of the lower esophageal sphincter
- D. Surgical treatment primarily consists of resection of the distal esophagus with reanastomosis to the stomach above the diaphragm
- E. Patients with this disease are at no increased risk for the development of carcinoma

Explanation

The answer is C. Patients with achalasia typically present with distal esophageal obstruction, which leads to regurgitation of saliva and undigested food. The characteristic appearance of the esophagram is the tapered "bird's beak" deformity at the level of the esophagogastric junction. Chest pain may be seen in the early stages of the disease. Manometry yields high resting pressures of the lower esophageal sphincter, which fails to relax or only partially relaxes. The absence of peristaltic deglutitory contractions in the body of the

esophagus is also noted during manometry. Although both surgical intervention and forceful dilation have been used to treat this disease, surgery results in improvement in over 90% of patients, compared with only 70% of patients treated by forceful dilation. Surgical treatment is an esophagomyotomy. Patients with achalasia have seven times the risk of developing squamous cell carcinoma as compared with the general population. This dreaded complication can occur even after successful treatment for the disease.

9. A 62-year-old African-American man reports progressive dysphagia that started three months ago with difficulty swallowing meat, and progressed to inability to swallow other solid foods, then soft foods and now liquids. He has lost over 25 lbs. during that time. He has a history of heavy smoking and drinking. Establish initial diagnosis.

- A. Achalasia of the oesophagus
- B. Diverticulum of the oesophagus
- C. Chhalasia of the oesophagus
- D. Tumour of the oesophagus
- E. Foreign body in the oesophagus

Explanation

Diagnosis: Cancer of the esophagus

- Probably squamous cell
- Had the history been one of long standing reflux, adenocarcinoma would have been a better bet.

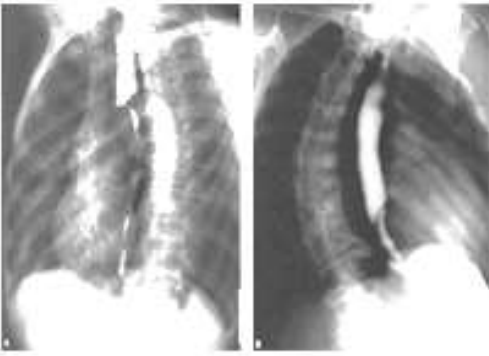
10. A stockbroker in his midforties consults you with complaints of episodes of severe, often incapacitating chest pain on swallowing. The diagnostic studies on the esophagus you have ordered yield the following: endoscopic examination and biopsy—mild inflammation distally; manometry —prolonged high-amplitude contractions from the arch of the aorta distally, lower esophageal sphincter (LES) pressure 20 mm Hg with relaxation on swallowing; barium swallow—2-cm epiphrenic diverticulum. You would recommend

- A. Myotomy from level of aortic arch to distal sphincter; no disruption of LES
- B. Diverticulectomy, myotomy from level of aortic arch to fundus, fundoplication
- C. Diverticulectomy, cardiomyotomy of distal 3 cm of esophagus and proximal 2 cm of stomach with antireflux fundoplication
- D. A trial of calcium channel blockers
- E. Pneumatic dilation of LES

Explanation

The answer is A. The diagnostic studies listed reveal minimal reflux esophagitis, normal LES relaxation and pressure, and an incidental small epiphrenic diverticulum. None of these findings justifies treatment and none explains the patient's symptoms. On the other hand, the finding of prolonged high-amplitude contractions in the body of the esophagus in a highly symptomatic patient is diagnostic of diffuse esophageal spasm. The cause of this hypermotility disorder is unknown, but its symptoms can be disabling. The recommended treatment for this relatively rare disorder is a long myotomy guided by the manometric evidence. If the LES is functioning properly, most surgeons would now recommend stopping the myotomy short of the normal lower sphincter. It should continue upward at least to the level of the aortic arch—higher if manometric findings of spasm are noted above that level. Eighty to 90% of patients treated in this fashion will experience acceptable relief of symptoms.

11. A 62-year-old black man is experiencing difficulty swallowing. He says that problem began with solid foods a few months ago, but now he has trouble with liquids as well. He also admits to poor appetite, fatigue, and 15-kg weight loss over the last few months, and mentions that his voice recently became hoarse. The patient has not seen a doctor in several years, but denies any medical problems. Social history includes a 60-pack-year tobacco history and daily alcohol consumption. The man is cachectic and has slightly icteric sclerae. No adenopathy is appreciated. Heart and lungs are normal. Abdominal exam is remarkable for loose-appearing skin on the abdominal wall and an enlarged liver with a palpable liver edge 4 cm below the costal margin. Rectal exam reveals heme-positive stool. T: 36.6°C; BP: 118/68; RR: 18/min; P: 94/min. Tests: Hb: 90 g/L; WBC's: 6900/ μ L. Barium oesophagram: see figure. Establish initial diagnosis.



- A. Achalasia of the oesophagus
- B. Diverticulum of the oesophagus
- C. Chalasia of the oesophagus
- D. Cancer of the oesophagus
- E. Foreign body in the oesophagus

Explanation

The barium swallow reveals an extensive, irregular filling defect in the oesophagus. Most cases of this malignancy are the squamous cell type and are caused by tobacco and alcohol abuse. The cancer classically arises from the middle or proximal third of the oesophagus. The typical patient is a black male over age 50 who smokes and drinks. Tumour spreads locally (the hoarseness is due to laryngeal nerve involvement) and to regional lymph nodes, liver, and other organs. classic symptoms are weight loss, dysphagia, anorexia, heme-positive stool, and signs/symptoms of metastases (e.g., palpable lymph nodes, jaundice, hoarseness). The barium swallow essentially confirms the diagnosis.

12. Several days following esophagectomy a patient complains of dyspnea and chest tightness. A large pleural effusion is noted on chest radiograph and thoracentesis yields milky fluid consistent with chyle. Initial management of this patient consists of which of the following procedures?

- A. Immediate operation to repair the thoracic duct
- B. Immediate operation to ligate the thoracic duct
- C. Tube thoracostomy and low-fat diet
- D. Observation and low-fat diet
- E. Observation and antibiotics

Explanation

The answer is -C. Chylothorax may occur after intrathoracic surgery, or it may follow malignant invasion or compression of the thoracic duct. Intraoperative recognition of a thoracic duct injury is managed by double ligation of the duct. Direct repair is impractical owing to the extreme friability of the thoracic duct. Injuries not recognized until several days after intrathoracic surgery frequently heal following the institution of a low-fat diet and either repeated thoracentesis or tube thoracostomy drainage. A low-fat, mediumchain triglyceride diet often reduces the flow of chyle. Failure of this treatment modality requires direct surgical ligation of the thoracic duct. This is best approached from below the diaphragm, regardless of the site of intrathoracic injury.

13. A 42-year-old man presents with a chief complaint of difficulty swallowing. His dysphagia has become gradually worse over the last 3 months and is equal for solids and liquids. He also mentions bouts of severe chest pain when drinking ice water, and occasional regurgitation of undigested food when he lies down to go to sleep at night. The physical exam is unremarkable. T: 36,6°C; BP: 120/70; RR: 16/min; P: 78/min. Tests: HB: 130g/L; WBC's: 8300/μL; ESR: 7 mm/h; EKG: normal sinus rhythm with no abnormalities. Barium swallow: see figure. The diagnosis of achalasia of the oesophagus is established. Choose the most rational management.



- A. Cardiodilatation by Shtark's rigid dilatator
- B. Operation of extramucosal oesophagocardiomyotomy with plasty by the gastric fundus.
- C. Cardiodilatation with balloon dilatator.
- D. Barium swallow first, then endoscopy and biopsies, eventually CT scan to determine operability.
- E. Cardioresection with oesophagogastric anastomosis.

Explanation

Fig. Barium swallow in a patient with achalasia. Treatment generally involves repeated endoscopic pneumatic dilatation. Surgery (Heller myotomy) is used for refractory or severe cases and involves a vertical esophageal incision through the LES

14. A 57-year-old black man is experiencing difficulty swallowing. He says that problem began with solid foods a few months ago, but now he has trouble with liquids as well. He also admits to poor appetite, fatigue, and 20-kg weight loss over the last few months, and mentions that his voice recently became hoarse. Social history includes a 40-pack-year tobacco history and daily alcohol consumption. The man is cachectic and has slightly icteric sclerae. Abdominal exam is remarkable for loose-appearing skin on the abdominal wall and an enlarged liver with a palpable liver edge 5 cm below the costal margin. Rectal exam reveals heme-positive stool. T: 36,6°C; BP: 120/70; RR: 22/min; P: 96/min. Tests: HB: 72 g/L; WBC's: 7900/μL. Barium oesophagram: see figure. The diagnosis of esophageal cancer is established. What is the most effective treatment for this patient?



- A. Cardiodilatation by Shtark's rigid dilatator
- B. Operation of extramucosal oesophagocardiomyotomy with plasty by the gastric fundus.
- C. Carioresection with oesophagogastric anastomosis
- D. Operation of oesophagofundus anastomosis by Gairovskiy.
- E. Cardiodilatation with balloon dilatator.

Explanation

The only hope for cure in most patients is surgical resection (resection of affected oesophagus with reanastomosis). Radiation and chemotherapy are options for advanced disease. The 5-year survival rate is only about 5%. Palliation is often important and may include oesophageal stent placement. Fig. 1 Barium swallow demonstrates the typical annular defect of the lower oesophagus in a patient with an adenocarcinoma of the oesophagus.

Master the skills and technique of performance:

To be able

1. Collect the anamnesis in patients with disease of the oesophagus, reveal characteristic differential diagnostic signs.
2. To analyze data of X-ray inspections.
3. Objective inspection of patients with diseases of the oesophagus.
4. Map out the plan of individual therapy of diseases established.
5. Establish the indication for surgical treatment which is necessary in every concrete case in diseases of the oesophagus.

4. Summing-up

5.Literature:

Basic:

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
5. The Bethesda handbook of clinical oncology / editors, Jame Abraham, James L. Gulley. Fifth Edition. Copyright © 2019 Wolters Kluwer
6. JANE C. ROTHROCK// Alexander's Care of the Patient in Surgery. 16th Ed. 2019

Additional:

7. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
8. Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaudi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), [& 2 More](#)

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners>- Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №5

Theme: " Hiatus hernia. "

Goal:

To Know:

- clinical anatomy and physiology of the diaphragm and gastro-oesophageal junction know --
- the classification structure, possible complications of hiatal hernia (SOD)

-the causes, types, clinical and radiological characteristics and methods of surgical correction of relaxation aperture know the causes, types, clinical and radiological characteristics and methods of surgical correction of relaxation aperture

Basic concepts: hiatus hernia. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure of the classes.

The main stages of the class, their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical recommendations, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level Solutions to common clinical situation tasks	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept of hiatus hernia				
2. Clinical course	level 3			
3. Modern methods of hiatus hernia				
Main stage				
To provide curation of patient with hiatus hernia	level 3	Practical training	Case patients with IAS	40 min
Master methodological determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical and paraclinical investigations	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and	level 3	Decision custom tasks	Test case studies of 3	15 min

practical skills they				
Summarizing Homework next session				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2 Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of hiatus hernia.
- Classification of hiatus hernia.
- Clinical manifestations of hiatus hernia.
- Additional examination methods for hiatus hernia.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

2. A 45-year-old executive experiences increasingly painful retrosternal heartburn, especially at night. He has been chewing antacid tablets. An esophagogram shows a hiatal hernia. In determining the proper treatment for a sliding hiatal hernia, which of the following is the most useful modality?

- a. Barium swallow with cinefluoroscopy during Valsalva maneuver
- b. Flexible endoscopy
- c. Twenty-four-hour monitoring of esophageal pH
- d. Measurement of the size of the hernia on upper GI
- e. Assessment of the patient's smoking and drinking history

Explanation

The answer is b. (Townsend, pp 1111-1114.) Endoscopy is an important step prior to undergoing operative intervention for GERD. It has the ability to exclude other diseases, such as tumors, and document the degree of peptic esophageal injury. Surgical treatment for sliding esophageal hernias (type I paraesophageal hernias) should be considered only in symptomatic patients with objectively documented esophagitis or stenosis. The overwhelming majority of sliding hiatal hernias are totally asymptomatic, even many of those with demonstrable reflux. Even in the presence of reflux, esophageal inflammation rarely develops because the esophagus is so efficient at clearing the refluxed acid. Symptomatic hernias should be treated vigorously by the variety of medical measures that have been found helpful. Patients who do have symptoms of episodic reflux and who remain untreated can expect their disease to progress to intolerable esophagitis or fibrosis and stenosis. Neither the presence of the hernia nor its size is important in deciding on surgical therapy. Once esophagitis has been documented to persist under adequate medical therapy, manometric or pH studies may help determine the optimum surgical treatment.

2. A 56-year-old woman has nonspecific complaints that include an abnormal sensation when swallowing. An esophagram is obtained. Which of the following is most likely to require surgical correction?
- Large sliding esophageal hiatal hernia
 - Paraesophageal hiatal hernia
 - Traction diverticulum of esophagus
 - Schatzki ring of distal esophagus
 - Esophageal web

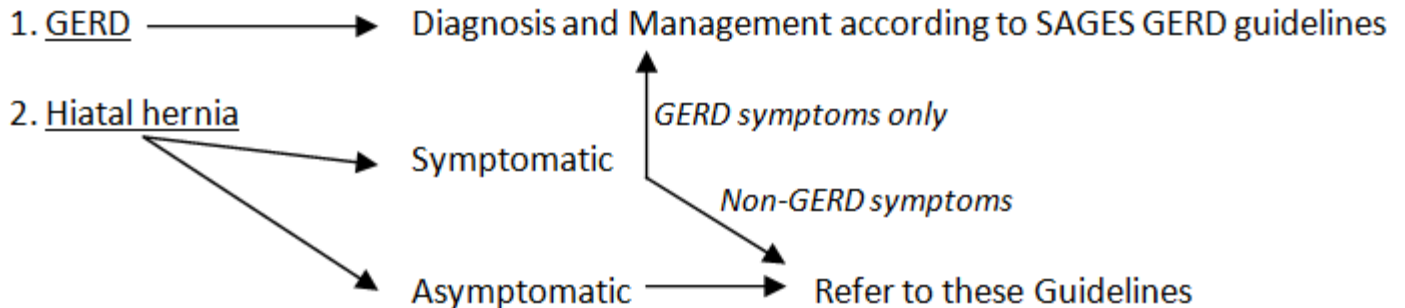
Explanation

The answer is b. (Brunnicardi, pp 842-846.) Normal respiration creates negative pressure in the thoracic cavity. As a result of the pressure gradient, blood enters the chest via the vena cava and air via the trachea; both are life-sustaining results of this pressure gradient. The pathophysiologic consequence of a hole in the diaphragm is that eventually abdominal viscera will be aspirated into the thorax. The sliding hernia, contained in the lower mediastinum by intact pleura, may rarely cause symptoms of reflux that would justify surgical attention, but such patients are in no danger of vascular compromise or of obstructive displacement of hollow viscera. The paraesophageal hernia, on the other hand, leaves the patient at substantial risk for both strangulation and obstruction. Either result would be a surgical catastrophe; with rare exceptions, paraesophageal hernias should be surgically repaired whenever diagnosed. A traction diverticulum is usually caused by inflammatory contraction around mediastinal nodes, is rarely of any symptomatic consequence, and need not be repaired. Neither the Schatzki ring nor the esophageal web justifies esophageal surgery. They can be ignored or dilated as symptoms demand.

3. A patient complains about pyrosis and permanent pain behind his breastbone. When he bends forward after eating there appears regurgitation. Roentgenological examination revealed extrasaccular cardiofunctional hernia of esophageal opening of diaphragm. Esophagoscopy revealed signs of reflux-esophagitis. What is the necessary treatment tactics?

- A Operation in a surgical department
- B Conservative treatment in an outpatients' clinic
- C Conservative treatment in the therapeutic hospital
- D Conservative treatment in a surgical department
- E Treatment at a health resort

Diagnostic pathway for GERD and for hiatal hernia.



4. Summing-up

5. Literature:

Basic:

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
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5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
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Additional:

1. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
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6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](http://www.AmericanMedicalAssociation.com)
3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
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7. www.bundesaerztekammer.de – Німецька медична асоціація
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10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №6

Theme: " DISEASES OF THE THYROID GLAND. "

Goal: To acquaint the students with symptomatics, diagnostics, differential diagnosis and treatment of diseases of the thyroid gland. Revise topographical anatomy of the neck organs.

TO KNOW.

- Contemporary representation about diagnostics and medical tactics in benign diseases of the thyroid gland /diffuse toxic goiter, hypothyroidism, epidemic and sporadic goiter /.
- Contemporary representation about diagnostics and medical tactics in thyroid cancer
- The basic complaints of the patients with diseases of the thyroid gland.
- Complications, which may develop after operations on thyroid gland.
- The indications for conservative and operative treatment.

Basic concepts: goiter. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure of the classes.

The main stages of the class, their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical recommendations, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level	Tasks Level 2, Level 3 tests,	

		Solutions to common clinical situation tasks	tasks Level 3	
1. Definition concept of goiter				
2. Clinical course	level 3			
3. Modern methods of goiter				
Main stage				
To provide curation of patient with goiter	level 3	Practical training	Case patients with IAS	40 min
Master methodological determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical and paraclinical investigations	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and practical skills they	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing Homework next session				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of goiter.
- Classification of goiter.
- Clinical manifestations of goiter.
- Additional examination methods for goiter.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in

	the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

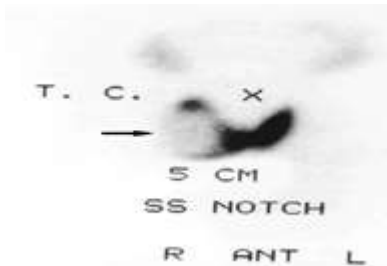
CASE SCENARIOS

1. A 36-year-old woman, 20 wk pregnant, presents with a 1.5-cm right thyroid mass. Fine-needle aspiration is consistent with a papillary neoplasm. The mass is “cold” by scan and solid by ultrasound. Which method of treatment would be contraindicated?

- A. Right thyroid lobectomy
- B. Subtotal thyroidectomy
- C. Total thyroidectomy
- D. Total thyroidectomy with lymph node dissection
- E. ¹³¹I radioactive ablation

Explanation

The answer is **E**. This patient has cytologic evidence of a papillary lesion, possibly papillary carcinoma. Papillary carcinoma is a relatively nonaggressive lesion with long-term survival (□20 years) of more than 90%. The lesion is frequently multicentric, which argues for more complete resection. Metastases, when they occur, are usually responsive to surgical resection or radioablation therapy. Removal of the involved lobe, and possibly the entire thyroid gland, is appropriate. Central and lateral lymph node dissection is performed for clinically suspect lymph nodes. Papillary carcinoma is frequently multifocal. Bilateral disease mandates total thyroidectomy. The use of radioactive ¹³¹I, however, is contraindicated in pregnancy and should be used with caution in women of childbearing age.



2. A 62-year-old man is experiencing hoarseness that developed over the last few weeks. The patient denies pain, fever, and recent sick contacts. His past medical history includes hypertension, arthritis, and benign prostatic hypertrophy. He also mentions that as an adolescent he had had acne on his face and neck, for which he was treated with radiation therapy. The patient’s voice is hoarse sounding. Neck exam reveals a single, stony-hard, 2cm nodule in the thyroid gland. The patient mentions that he first noticed the

lump a month ago while buttoning up his shirt and that is grown fairly quickly to its current size. You also discern fixed, hard lymphadenopathy in the neck adjacent to the thyroid gland. The rest of the physical exam is unremarkable. T: 36,6⁰C; BP: 140/80; RR: 16/min; P: 74/min. Tests: Hb: 140 g/L; WBC’s: 6900/μL; platelet count: 270, 000/μL; Thyroid-stimulating hormone: 2,1μU/mL (normal 0,5-5,0); thyroxine, total: 7μg/dL (normal 4-12). Nuclear I¹²³ thyroid scan: see figure. Establish diagnosis.

- A. Endemic goiter
- B. Diffuse toxic goiter, light thyrotoxicosis.
- C. Autoimmune thyroiditis, hypothyroidism.
- D. Diffuse toxic goiter, moderate thyrotoxicosis
- E. Thyroid cancer

Explanation

The patient has recurrent laryngeal nerve involvement (causing hoarseness) and metastases to regional lymph nodes. The nuclear scan reveals a “cold” (non-functioning) nodule in the right lobe of the gland. Thyroid cancer is often asymptomatic, except for a nodular mass in the thyroid gland. Rapid growth is fairly common. the nodule is classically very hard and singular. Adenopathy in the neck and hoarseness are signs of extension of the cancer outside the thyroid gland.. in any suspicious case, nuclear medicine scan can be used to see if the nodule is “hot”(functional, almost always benign) or “cold”(non-functional, could be benign or malignant).

3. A 23-year-old woman undergoes total thyroidectomy for carcinoma of the thyroid gland. On the second postoperative day, she begins to complain of tingling sensation in her hands. She appears quite anxious and later complains of muscle cramps. Initial therapy should consist of
- 10 mL of 10% magnesium sulfate intravenously
 - Oral vitamin D
 - 100 µg of oral Synthroid
 - Continuous infusion of calcium gluconate
 - Oral calcium gluconate

Explanation

The answer is **D**. Postthyroidectomy hypocalcemia is usually due to transient ischemia of the parathyroid glands and is self-limited. When it becomes symptomatic, it should be treated with intravenous infusions of calcium. In most cases the problem is resolved in several days. If hypocalcemia persists, oral therapy is then added with calcium gluconate. Vitamin D preparations are only used if hypocalcemia is prolonged and permanent hypocalcemia is suspected. There is no role for thyroid hormone replacement or magnesium sulfate in the treatment of hypocalcemia.

4. A 32-year-old lady has a solitary, 2cm firm mass in the right lobe of her thyroid gland. The mass has been present for at least three years, and is growing very slowly. Her thyroid function tests are normal. Diagnosis
- Endemic goiter
 - Diffuse toxic goiter, light thyrotoxicosis.
 - Autoimmune thyroiditis, hypothyroidism.
 - Diffuse toxic goiter, moderate thyrotoxicosis
 - Thyroid cancer

Explanation

Diagnosis:

- Probably benign, but have to rule out cancer.
- Thyroid cancers can occur in young people, they grow very slowly and they do not affect the thyroid function.
- Highest probability of cancer is in young male with single, solid, cold nodule and history of radiation to the neck.

5. A 25-year-old lady has a solitary, 2cm firm mass in the right lobe of her thyroid gland. The mass has been present for at least two years, and is growing very slowly. Her thyroid function tests are normal. The diagnosis of nodular goiter is established. What kind of research methods will allow to choose correct medical tactics for the patient?
- Biopsy of the formation with morphological research
 - Indicator method
 - Scintiscan with tumourotropic radiopharmaceutical
 - Electronic-emission tomography
 - Thermography of the thyroid gland

Explanation

Management:

- Leave alone if reported benign. Operate if reported indeterminate or malignant. Even with good case selection, most resected thyroid nodules are benign. Highest yield of malignancy when selected by FNA.

6. A 50-year-old woman is experiencing hoarseness that developed over the last few weeks. The patient denies pain, fever, and recent sick contacts. Her past medical history includes hypertension and arthritis. The patient's voice is hoarse sounding. Neck exam reveals a single, stony-hard, 3cm nodule in the thyroid gland. The patient mentions that she first noticed the lump a month ago. You also discern fixed, hard lymphadenopathy in the neck adjacent to the thyroid gland. T: 36.6°C; BP: 160/90; RR: 18/min; P: 78/min. Tests: Hb: 150 g/L; WBC's: 5900/μL; platelet count: 270,000/μL; Thyroid-stimulating hormone: 4.1 μU/mL (normal 0.5-5.0); thyroxine, total: 10 μg/dL (normal 4-12). The diagnosis of thyroid cancer is established. What management do you offer to the patient?

- Iodine therapy in microdoses (1-2 mkg)
- Use food, rich with tyrosine
- Refusal of smoking
- Thyroidectomy
- Regular surveys by the doctor

Explanation

Treatment for thyroid cancer is surgical resection (thyroidectomy). Radioactive I¹³¹ can be used for metastases with papillary or follicular subtypes.

Management for goiter

Diagnosis

A goiter is often discovered during a routine physical exam. By touching your neck, your health care provider may detect an enlargement of the thyroid, an individual nodule or multiple nodules. Sometimes a goiter is found when you are undergoing an imaging test for another condition. Additional tests are then ordered to do the following:

- Measure the size of the thyroid
- Detect any nodules
- Assess whether the thyroid may be overactive or underactive
- Determine the cause of the goiter

Tests may include:

- **Thyroid function tests.** A blood sample can be used to measure the amount of TSH produced by the pituitary gland and how much T₄ and T₃ is produced by the thyroid. These tests can show whether the goiter is associated with an increase or decrease in thyroid function.
- **Antibody test.** Depending on the results of the thyroid function test, your health care provider may order a blood test to detect an antibody linked to an autoimmune disorder, such as Hashimoto's disease or Graves' disease.
- **Ultrasonography.** Ultrasonography uses sound waves to create a computerized image of tissues in your neck. The technician uses a wand-like device (transducer) over your neck to do the test. This imaging technique can reveal the size of your thyroid gland and detect nodules.
- **Radioactive iodine uptake.** If your health care provider orders this test, you are given a small amount of radioactive iodine. Using a special scanning device, a technician can measure the amount and rate at which your thyroid takes it in. This test may be combined with a radioactive iodine scan to show a visual image of the uptake pattern. The results may help determine function and cause of the goiter.
- **Biopsy.** During a fine-needle aspiration biopsy, ultrasound is used to guide a very small needle into your thyroid to obtain a tissue or fluid sample from nodules. The samples are tested for the presence of cancerous cells.

Treatment

Goiter treatment depends on the size of the goiter, your signs and symptoms, and the underlying cause. If your goiter is small and your thyroid function is healthy, your health care provider may suggest a wait-and-see approach with regular checkups.

Medications

Medications for goiters may include one of the following:

- **For increasing hormone production.** An underactive thyroid is treated with a thyroid hormone replacement. The drug levothyroxine (Levoxyl, Thyquidity, others) replaces T-4 and results in the pituitary gland releasing less TSH. The drug liothyronine (Cytomel) may be prescribed as a T-3 replacement. These treatments may decrease the size of the goiter.
- **For reducing hormone production.** An overactive thyroid may be treated with an anti-thyroid drug that disrupts hormone production. The most commonly used drug, methimazole (Tapazole), may also reduce the size of the goiter.
- **For blocking hormone activities.** Your health care provider may prescribe a drug called a beta blocker for managing symptoms of hyperthyroidism. These drugs — including atenolol (Tenormin), metoprolol (Lopressor) and others — can disrupt the excess thyroid hormones and lower symptoms.
- **For managing pain.** If inflammation of the thyroid results in pain, it's usually treated with aspirin, naproxen sodium (Aleve), ibuprofen (Advil, Motrin IB, others) or related pain relievers. Severe pain may be treated with a steroid.

Surgery

You may need surgery to remove all or part of your thyroid gland (total or partial thyroidectomy) may be used to treat goiter with the following complications:

- Difficulty breathing or swallowing
- Thyroid nodules that cause hyperthyroidism
- Thyroid cancer

You may need to take thyroid hormone replacement, depending on the amount of thyroid removed.

Radioactive iodine treatment

Radioactive iodine is a treatment for an overactive thyroid gland. The dose of radioactive iodine is taken orally. The thyroid takes up the radioactive iodine, which destroys cells in the thyroid. The treatment lowers or eliminates hormone production and may decrease the size of the goiter.

As with surgery, you may need to take thyroid hormone replacement to maintain the appropriate levels of hormones.

4. Summing-up

5. Recommended reading.

Basic:

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill/RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.

5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
6. The Bethesda handbook of clinical oncology / editors, Jame Abraham, James L. Gulley. Fifth Edition. Copyright © 2019 Wolters Kluwer
7. JANE C. ROTHROCK// Alexander's Care of the Patient in Surgery. 16th Ed. 2019
8. SEIDEL'S GUIDE TO PHYSICAL EXAMINATION: AN INTERPROFESSIONAL APPROACH. Copyright © 2019 by Elsevier, Inc.

Additional:

1. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія: Підручник для мед. ун-тів, інст., акад. Рекомендовано Вченою радою Буковинського НМУ / О.М. Слободян, В.Ю. Єршов, Г.Ю. Костюк, В.І. Півторак; за ред. В.Ю. Єршова. — К., 2018. — 504 с.
2. David J. Terris// Thyroid and Parathyroid Diseases. 2nd edition. 2017
3. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
4. Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaudi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), & 2 More

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners-> Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <http://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №7

Theme: " Diseases of the breast (dishormonal, tumoural).".

2. Goal:

TO KNOW.

1. Methods of patient's examination in breast pathology
2. Special examinations;
3. Development of anomalies of the mammary gland;
4. Non-specific inflammatory diseases of the mammary gland;
5. Benign tumours;

6. Aetiology, pathogenesis of breast cancer.
7. Clinical features and diagnosis of breast cancer
8. Treatment of breast cancer;
9. Mammary gland sarcoma

Basic concepts: mammary gland diseases of the breast. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure of the classes.

The main stages of the class, their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical recommendations, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level Solutions to common clinical situation tasks	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept of mastopathy				
2. Clinical course	level 3			
3. Modern methods of breast examination				
Main stage				
To provide curation of patient with diseases of the breast	level 3	Practical training	Case patients with IAS	40 min
Master methodological determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical and paraclinical investigations	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and	level 3	Decision custom	Test case studies	15 min

correction of knowledge and practical skills		tasks	of 3	
Summarizing Homework next session				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of mastitis.
- Classification of mastitis.
- Clinical manifestations of mastitis.
- Additional examination methods for mastitis.
- Conservative treatment
- Surgical treatment.
- Etiology, pathogenesis of mastopathy.
- Classification of mastopathy.
- Clinical manifestations of mastopathy.
- Additional examination methods for mastopathy.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

DIRECTIONS: Each item below contains a question or incomplete statement followed by suggested responses. Select the one best response to each question.

1. A 42-year-old lady has a 2cm. firm mass in her right breast, which has been present for three months, and is steadily growing. Establish presumable diagnosis.

- A. Lipoma
- B. Fibroadenoma.
- C. Cyst.
- D. Mastopathy
- E. Cancer

Explanation

Diagnosis:

- Breast cancer has to be ruled out.
- The probability of a breast mass being cancer is directly related to the patient's age.
- 18 year-old, rubbery mass: Fibroadenoma
- 20-40, multiple lumps, tender, related to cycle: Fibrocystic disease
- Bloody nipple discharge: Intraductal papilloma
- Breast abscess: Found only during lactation
- Older lady, hard mass, skin dimpling: Cancer
- Older lady, eczematoid lesion of areola: Cancer

2. A 19-year-old woman noted a lump in her right breast yesterday during a self-exam. She denies any nipple discharge, pain, or skin changes. She has no family history of breast cancer. Menstrual history is unremarkable. The patient is not currently sexually active, and the only medication she takes regularly is birth control pills, which she started 2 months ago. Her right breast has a well circumscribed, 2-cm, rubbery, and mobile mass in the lower outer quadrant of the breast. There are no changes in the skin, nor is there is evidence of nipple discharge or retraction. The remainder of the exam is unremarkable, and lymphadenopathy is appreciated. T: 36,6°C ; BP: 120/70; RR: 16/min; P: 66/min. Tests: HB: 140 g/L; WBC's: 7400/μL; Platelet count: 190,000/μL. Establish diagnosis.

- A. Cystic mastopathy of the right mammary gland
- B. Fibroadenoma
- C. Cyst in the right mammary gland.
- D. Cancer in the right mammary gland.
- E. Galactocele

Explanation

Fibroadenomas are classically well-circumscribed, rubbery, mobile masses that occur in women under age 30 (though they can be seen at any time). Fibroadenomas, which are composed of both fibrous and glandular tissue, are the most common benign tumours of the breast.

3. A 58-year-old woman is troubled by skin changes on her right breast. She says the skin around her right nipple become red and "crusty" over the past few months. The patient does not perform self-breast exam, but says she has not noticed any lumps in her breast. The woman has no children. Her menstrual history is unremarkable. She mentions that she has two sisters and an aunt who died of breast cancer. The patient's chest is clear to auscultation. Her right nipple has an eczematoid, scaly appearance with some crusting. You palpate a fairly firm, 1,5-cm mass with somewhat irregular margins in the upper, outer quadrant of the right breast. The mass is not fixed to the chest wall. There are no palpable axillary lymph nodes. T: 36,6°C; BP: 150/90; RR: 14/min; P: 72/min. Tests: HB: 150 g/L; WBC's: 6600/μL; AST: 0,5 mmol/L; Right breast mammogram: see figure. Establish diagnosis.



- A. Mastitis
- B. Cyst
- C. Cancer
- D. Nodular mastopathy
- E. Fibroadenoma

Explanation

The answer is **C**. Most cases of breast cancer are detected in the outer, upper quadrant by the patient or physician during a breast exam or through screening mammography. Pain is unusual. Skin thickening and oedema (peau d'orange) or inflammatory changes (inflammatory carcinoma), nipple retraction, and/or a unilateral bloody nipple discharge may sometimes be present. Paget's disease classically presents as eczematoid changes of the nipple with scaling, oozing, and/or crusting. Axillary adenopathy generally indicates tumour spread. Fig. Mammographic features of breast cancer. A mass effect associated with distortion, skin thickening, and retraction.

4. A 22-year-old woman presents with a chief complaint of lumps in her breast and breast pain and tenderness. She says her breasts have been lumpy and uncomfortable for several years now. However, the symptoms went away during her recent pregnancy and subsequent breast-feeding of her daughter, which she stopped 4 months ago. The patient says the breast pain and tenderness, as well as some swelling, occur every month at the same time as her other premenstrual symptoms, which include bloating and irritability. Symptoms then resolve during menses. The patient denies nipple discharge or skin changes. Both breasts have a lumpy, nodular consistency; however, no dominant masses are identified. The breasts are fairly symmetric and slightly tender to palpation. There are no changes in the skin. No lymphadenopathy is appreciated. T: 36,6°C; BP: 120/70; RR: 14/min; P: 70/min. Tests: HB: 130 g/L; WBC's: 7000/μL; Platelet count: 220,000/μL. Establish diagnosis.

- A. Fibrocystic mastopathy
- B. Breast cancer
- C. Milk cyst
- D. Chronic mastitis
- E. Tuberculosis of the mammary gland

Explanation

Fibrocystic changes and nodularity in the breasts occur in roughly 50% of all women, thus the trend to move away from the term "disease". There is thought to be some hormonal component to the changes, as pregnancy and lactation cause improvement. Clinical examination reveals "lumpy, bumpy" breasts. The classic history includes symptoms of pain, tenderness, and breast swelling each month during the premenstrual phase of a woman's cycle, with resolution of symptoms during or shortly after menses.

5. A 42-year-old lady has a 2cm. firm mass in her right breast, which has been present for three months, and is steadily growing. The presumable diagnosis of breast cancer is established. Administer management.

- A. Chemo-radiation treatment
- B. Fine - fractional TGT + Hallstead's operation
- C. Mammogram to identify other lesions if present.
- D. Hallstead's operation + chemotherapy.
- E. Urban-Holding's operation.

Explanation

Management:

- Start with mammogram to identify other lesions if present. Then, core biopsies.
 - Mammogram should precede biopsies in women over 35, but it is done to identify other potential lesions, not as a substitute for the biopsy (only the pathologist can make the diagnosis).
 - Do not order mammograms below age 20 (breast too dense – use sonogram if needed) or in lactating women (will only see milk).
 - Depending on the probability of cancer, a spectrum of progressively more aggressive
- Tissue sampling is done: FNA, core biopsy, mammotome, ABBI, incisional biopsy or excisional biopsy.

6. Incisional biopsy of a breast mass in a 35-year-old woman demonstrates a hypercellular fibroadenoma (cystosarcoma phylloides) at the time of frozen section. Appropriate management of this lesion could include

- A. Wide local excision with a rim of normal tissue
- B. Lumpectomy and axillary lymphadenectomy
- C. Modified radical mastectomy
- D. Excision and postoperative radiotherapy

E. Excision, postoperative radiotherapy, and systemic chemotherapy

Explanation

The answer is **A**. Cystosarcoma phylloides is a tumor most often seen in younger women. It can grow to enormous size and at times ulcerate through the skin. Still, it is a lesion with low propensity toward metastasis. Local recurrence is common, especially if the initial resection was inadequate. Simple reexcision with adequate margins is curative. Very large lesions may necessitate simple mastectomy to achieve clear margins. Axillary lymphadenectomy, however, is seldom indicated without biopsy-positive demonstration of tumor in the nodes. The low incidence of metastatic disease suggests that adjunctive therapy is indicated only for known metastatic disease, even when the tumors are quite large and ulcerated.

7. A 47-year-old woman is troubled by skin changes on her left breast. She says the skin around her left nipple become red and "crusty" over the past few months. The left nipple is unaffected. The patient does not perform self-breast exam, but says she has not noticed any lumps in her breast. The woman has no children. Her menstrual history is unremarkable, other than the fact that she just went through menopause earlier this year. The patient's chest is clear to auscultation. Her right nipple has an eczematoid, scaly appearance with some crusting. You palpate a fairly firm, 2-cm mass with somewhat irregular margins in the upper, outer quadrant of the left breast. The mass is not fixed to the chest wall. There are no palpable axillary lymph nodes. The rest of exam is normal. T: 36,6°C; BP: 130/90; RR: 16/min; P: 78/min. Tests: HB: 140 g/L; WBC's: 7500/μL; AST: 0,4 mmol/L; left breast mammogram: see figure. The diagnosis of Paget's disease is established. Which treatment will be the most effective?

- A. Chemo-radiation treatment
- B. Fractional TGT + Hallstead's operation
- C. Lumpectomy with axillary node dissection + radiation.
- D. Hallstead's operation + chemotherapy.
- E. Urban-Holding's operation.

Explanation

Treatment includes surgical resection (lumpectomy with radiation) with axillary node dissection to detect metastases. Give tamoxifen ("hormonal therapy") for oestrogen or progesterone receptor-positive tumours. Give chemotherapy with "node positive" disease and/or with distant metastases.

8. A 40-year-old woman is found to have a 1- to 2-cm, slightly tender cystic mass in her breast; she has no perceptible axillary adenopathy. What course would you follow?

- A. Reassurance and reexamination in the immediate postmenstrual period
- B. Immediate excisional biopsy
- C. Aspiration of the mass with cytologic analysis
- D. Fluoroscopically guided needle localization biopsy
- E. Mammography and reevaluation of options with new information

Explanation

The answer is **C**. Most clinicians would recommend aspiration and cytologic examination of the cyst fluid in this situation. Cysts are common lesions in the breasts of women in their thirties and forties; malignancies are relatively rare. All such lesions justify attention, however, and physicians must not underestimate the fear associated with the discovery of a mass in the breast, even in low-risk situations. If the lesion does not completely disappear after aspiration, excision is advised. In young women the breast parenchyma is dense, which limits the diagnostic value of mammography. The American Cancer Society (ACS) does not suggest a baseline mammographic examination until age 35 unless a suspicious lesion exists.

9. A 21-year-old woman noted a lump in her left breast during a self-exam. She denies any nipple discharge, pain, or skin changes. She has no family history of breast cancer. Menstrual history is unremarkable. The patient is not currently sexually active, and the only medication she takes regularly is birth control pills, which she started 2 months ago. Her left breast has a well circumscribed, 1,5-cm, rubbery, and mobile mass in the lower outer quadrant of the breast. There are no changes in the skin, nor is there is evidence of nipple discharge or retraction. The remainder of the exam is unremarkable, and lymphadenopathy is appreciated. T: 36,6°C ; BP: 120/60; RR: 18/min; P: 78/min. Tests: HB: 150 g/L; WBC's: 6000/μL; Platelet count: 200,000/μL. The diagnosis of fibroadenoma of the left breast is established. Which treatment will be the most effective?

- A. Chemo-radiation treatment
- B. Fractional TGT + Hallstead's operation
- C. Urban-Holding's operation.
- D. Hallstead's operation + chemotherapy.
- E. Lumpectomy.

Explanation

Lumpectomy can be performed for cosmetic reasons or in response to patient desire, but a presumptive diagnosis can generally be made in young women.

10. A 35-year-old woman undergoes her first screening mammogram. Which of the following mammographic findings would require a breast biopsy?

- A. Breast calcifications larger than 2 mm in diameter
- B. Five or more clustered breast microcalcifications per square centimeter
- C. A density that effaces with compression
- D. Saucer-shaped microcalcifications
- E. Multiple round well-circumscribed breast densities

Explanation

The answer is **B**. Breast biopsies have traditionally been performed to obtain histology for clinically suspicious palpable masses. In more recent years the advent of screening mammography has led to the discovery of nonpalpable but radiographically suspicious breast lesions that have a strong correlation with breast cancer. These nonpalpable, mammographically detected lesions are (1) breast calcifications that are (a) smaller than 2 mm, (b) punctate, microlinear, or branching, and (c) clustered along ducts or concentrated in clusters greater than five calcifications per square centimeter; (2) stellate-shaped lesions; (3) masses with ill-defined borders or nodular contours; (4) solitary dominant masses that are significantly larger than any other mass in either breast; and (5) areas of increased noneffacing tissue density or distorted breast architecture. A parenchymal density that effaces with compression represents normal glandular tissue. Saucer-shaped microcalcifications are seen in patients with microscopic cystic disease, a benign condition. Multiple round well-circumscribed densities are usually cysts, whose nature may be confirmed with breast sonography.

Diagnostic pathway for mastopathy.

- **Clinical breast exam.** Your doctor feels (palpates) your breasts and the lymph nodes located in your lower neck and underarm area checking for unusual breast tissue. If the breast exam — along with your medical history — suggests you have normal breast changes, you may not need additional tests. But if your doctor finds a new lump or suspicious breast tissue, you may need to come back a few weeks later, after your period, for another clinical breast exam. If the changes persist or the breast exam is concerning, you may need additional tests, such as a diagnostic mammogram or ultrasound.
- **Mammogram.** If your doctor detects a breast lump or prominent thickening in your breast tissue, you need a diagnostic mammogram — an X-ray exam that focuses on a specific area of concern in your breast. The radiologist closely examines the area of concern when interpreting the mammogram.
- **Ultrasound.** An ultrasound uses sound waves to produce images of your breasts and is often performed along with a mammogram. If you're younger than age 30, you might have an ultrasound instead of a mammogram. Ultrasound is better for evaluating a younger woman's dense breast tissue — tissue tightly packed with lobules, ducts and connective tissue (stroma). Ultrasound can also help your doctor distinguish between fluid-filled cysts and solid masses.
- **Fine-needle aspiration.** For a breast lump that feels a lot like a cyst, your doctor may try fine-needle aspiration to see if fluid can be withdrawn from the lump. This helpful procedure can be done in the office. A fine-needle aspiration may collapse the cyst and resolve discomfort.
- **Breast biopsy.** If a diagnostic mammogram and ultrasound are normal, but your doctor still has concerns about a breast lump, you may be referred to a breast surgeon to determine whether you need a surgical breast biopsy.

A breast biopsy is a procedure to remove a small sample of breast tissue for microscopic analysis. If a suspicious area is detected during an imaging exam, your radiologist may recommend an ultrasound-guided breast biopsy or a stereotactic biopsy, which uses mammography to pinpoint the exact location for the biopsy.

4. Summing-up

5. Recommended reading.

BASIC:

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
6. General Surgery=Загальна хірургія: Підручник для мед. ун-тів., інст., акад. Затверджено МОН / За ред. С.Д. Хіміча, М.Д. Желіби. — К., 2019. — 536 с.
7. The Bethesda handbook of clinical oncology / editors, Jame Abraham, James L. Gulley. Fifth Edition. Copyright © 2019 Wolters Kluwer
8. JANE C. ROTHROCK// Alexander's Care of the Patient in Surgery. 16th Ed. 2019
9. SEIDEL'S GUIDE TO PHYSICAL EXAMINATION: AN INTERPROFESSIONAL APPROACH. Copyright © 2019 by Elsevier, Inc.
10. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія: Підручник для мед. ун-тів, інст., акад. Рекомендовано Вченою радою Буковинського НМУ / О.М. Слободян, В.Ю. Єршов, Г.Ю. Костюк, В.І. Півторак; за ред. В.Ю. Єршова. — К., 2018. — 504 с.
11. Bland/ Copeland/ Klimberg/Gradishar//The Breast. Comprehensive Management
i. of Benign and Malignant Diseases. 5th Ed. 2018
12. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
13. Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaardi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), [& 2 More](#)

Additional literature.

1. Breast Surgery: A Companion to Specialist Surgical Practice
Edited by J. Michael Dixon
 - Format Mixed media product | 340 pages
 - Publication date 15 Aug 2013
 - Publisher Elsevier Health Sciences
 - Publication City/Country London, United Kingdom

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](http://www.ama-assn.org)
3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners-> Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №8

Theme: " Arterial thromboses&emboli."

Goal:

TO KNOW

1. Anatomical features of structure of major arteries of the lower extremities.
2. Clinics and diagnostics of arterial thrombosis and embolism of the lower extremities.
3. Variants of treatment of arterial thrombosis and embolism of the lower extremities.
4. Clinics and diagnostics of arterial thrombosis and embolism of the lower extremities.
5. Variants of treatment of arterial thrombosis and embolism of the lower extremities.
6. Clinics, diagnostics and treatment of acute thrombosis of the lower extremities.
7. Clinics and diagnostics of embolism of the lower extremities.
8. Treatment of embolism of the lower extremities.

Basic concepts: arterial thrombosis and embolism. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure of the lesson.

The main stages of occupation of their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control%	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical development, table slides	3 min

Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level Solutions to common clinical situation tasks	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept arterial thrombosis and embolism				
2. Definition clinical course	level 3			
3. Modern methods of diagnosis arterial thrombosis and embolism				
4. Methods of surgical treatment	level 3			
Main stage				
To provide curation of patient arterial thrombosis and embolism	level 3	Practical training	Case patients with ALI	40 min
Master methodological determination	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical examination	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and practical skills	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing lessons				
Homework				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of arterial thrombosis and embolism.
- Classification of arterial thrombosis and embolism.

- Clinical manifestations of arterial thrombosis and embolism.
- Additional examination methods for arterial thrombosis and embolism.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);
Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

DIRECTIONS: Each item below contains a question or incomplete statement followed by suggested responses. Select the one best response to each question

1. A 25-year-old woman presents to the emergency room complaining of redness and pain in her right foot up to the level of the midcalf. She reports that her right leg has been swollen for at least 15 years, but her left leg has been normal. On physical examination she has a temperature of 39°C (102.2°F). The left leg is normal. The right leg is not tender, but it is swollen from the inguinal ligament down and there is an obvious cellulites of the right foot. The patient's underlying problem is

- Popliteal entrapment syndrome
- Acute arterial insufficiency
- Primary lymphedema
- Deep venous thrombosis
- None of the above

Explanation

The answer is C. This patient is at high risk for developing cellulitis of her right foot because her underlying problem is unilateral primary lymphedema. Hypoplasia of the lymphatic system of the lower extremity accounts for greater than 90% of patients with primary lymphedema. If edema is present at birth it is referred to as congenital; if it starts early in life (as in this woman) it is called praecox; and if it appears after age 35 it is tarda. The inadequacy of the lymphatic system accounts for the repeated episodes of cellulitis that these patients experience. Swelling is not seen with acute arterial insufficiency or with popliteal entrapment syndrome. Deep venous thrombophlebitis will result in tenderness and is generally not a predisposing factor for cellulitis of the foot.

2. A 60-year-old man is admitted to the coronary care unit with a large anterior wall myocardial infarction. On his second hospital day he begins to complain of the sudden onset of numbness in his right foot and an inability to move his right foot. On physical examination, the right femoral, popliteal, and pedal pulses are no longer palpable.

Vascular consultation is obtained. Diagnosis of acute arterial embolus is made. Which of the following statements concerning this condition is true?

- A. Appropriate management would be embolectomy of the right femoral artery under general anesthesia
- B. Noninvasive hemodynamic testing is required
- C. Prophylactic exploration of the contralateral femoral artery should be done despite the presence of a normal pulse
- D. The source of the embolus is most likely the left ventricle
- E. Arteriography is mandatory prior to operative intervention

Explanation

The answer is **D**. The heart is the most common source of arterial emboli and accounts for 90% of cases. Within the heart, sources include diseased valves, endocarditis, the left atrium in patients with unstable atrial arrhythmias, and mural thrombus on the wall of the left ventricle in patients with a myocardial infarction. The diagnosis in this patient is clear, and therefore neither noninvasive testing nor arteriography is indicated. Arteriography in fact may also prove to be too stressful for a patient undergoing an acute myocardial infarction. Embolectomy of the femoral artery can be performed under local anesthesia with minimal risk to the patient. Emboli typically lodge in one femoral artery; contralateral exploration is not indicated in the absence of signs or symptoms. One should always prepare the contralateral groin in case flow is not restored via simple thrombectomy and femoral-femoral bypass is needed to provide inflow to the affected limb.

3. A 55-year-old man with recent onset of atrial fibrillation presents with a cold, numb, pulseless left lower extremity. He is immediately taken to the operating room for an embolectomy of the left popliteal artery. Which additional procedure should be performed along with the embolectomy?

- a. Electromyography (EMG) of the leg
- b. Measurement of anterior compartment pressure in the leg
- c. Fasciotomy of the anterior compartment in the leg
- d. Fasciotomy of all the compartments in the leg
- e. Application of a posterior splint to the leg

The answer is **d**. (Townsend, pp 545-547.) This patient should undergo four compartment fasciotomy (anterior, lateral, superficial posterior, and deep posterior) since he satisfies 2 conditions that lead to a compartment syndrome of the leg: acute arterial occlusion without collateral inflow and rapid reperfusion of ischemic muscle. Another common cause of compartment syndrome is orthopedic trauma to the leg. The need for fasciotomy is based on clinical judgment. If a fasciotomy is indicated, all 4 compartments should always be opened. Electromyographic studies and compartment pressure measurements would probably be abnormal, but are unnecessary in view of the known findings and would delay treatment. Application of a splint has no role in the acute management of this problem.

4. A 60-year-old man is admitted to the coronary care unit with a large anterior wall myocardial infarction. On his second hospital day, he begins to complain of the sudden onset of numbness in his right foot and an inability to move his right foot. On physical examination, the right femoral, popliteal, and pedal pulses are no longer palpable. The left lower extremity is normal. Which of the following is the most appropriate management of this patient?

- a. Duplex imaging of the right lower extremity arteries
- b. CT angiogram of the right lower extremity
- c. CT angiogram of bilateral lower extremities
- d. Embolectomy of the right femoral artery
- e. Embolectomy of the right femoral artery with exploration of the contralateral femoral artery

The answer is **d**. (Townsend, pp 1957-1958.) Immediate surgical intervention is the appropriate management for patients presenting with acute arterial insufficiency with neurologic compromise of the lower

extremities from thromboembolic disease. The heart is the most common source of arterial emboli and accounts for 90% of cases. Sources include diseased valves, endocarditis, the left atrium in patients with unstable atrial arrhythmias, and mural thrombus on the wall of the left ventricle in patients with myocardial infarction. The diagnosis in this patient is clear, and therefore neither noninvasive testing nor arteriography is indicated. These studies would only delay treatment and lead to limb loss. Embolectomy of the femoral artery can be performed under local anesthesia with minimal risk to the patient. Emboli typically lodge in 1 femoral artery; contralateral exploration is not indicated in the absence of signs or symptoms. The contralateral groin should always be prepared in case flow is not restored via simple thrombectomy, and femoral-femoral bypass is needed to provide inflow to the affected limb.

5. In a 38-year-old man severe pain in the left foot and leg has appeared two hours ago. The extremity became cold and pale. He is ill with mitral stenosis. Objectively: the skin of the right foot and leg is pale and cold; pulsation on the foot and popliteal arteries is absent. Tactile and temperature sensitivity are reduced. The most probable diagnosis.
 - A. Lumbosacral radiculitis
 - B. Acute thrombosis in the popliteal artery
 - C. Neuritis of sciatic nerve
 - D. Acute thrombosis in the popliteal vein
 - E. Embolism in the popliteal artery

6. In a 38-year-old woman embolism in the right popliteal artery has been diagnosed. Duration of the embolism is one hour. What kind of the first pre-hospital aid should be?
 - A. Analgesics, spasmolytics, to apply an ice pack
 - B. Hot compress, immobilization
 - C. Immobilization, analgesics, hot compress
 - D. To apply an ice pack on the extremity; immobilization, analgesics, spasmolytics
 - E. Spasmolytics, analgesics, immobilization

7. A 49-year-old man was transported from a cardiologic hospital in 5 hours after the onset of the disease with complaints to a pain in the left leg and foot, numbness sensation and absence of movements in the ankle joint. He was treated for myocardial infarction within previous two weeks. On survey the patient's general state is heavy. P: 86/min, is arrhythmic. BP: 140/30 mm Hg. On auscultation cardiac sounds are arrhythmic and muffle. The skin of the left lower extremity and at the middle third of the thigh has got pale-cyanotic specks. The foot and leg are cold up to the middle third of the thigh. Movements in the ankle joint and toes are absent. Dermal sensitivity is absent up to the knee joint site. Pulsation on arteries is only being defined on the femoral artery under inguinal ligament, lower it is absent. On the right lower extremity pulsation on all peripheral arteries is satisfactory. What diagnosis the most probable?
 - A. Nonspecific aortoarteritis
 - B. Acute thrombosis in the left femoral artery.
 - C. Atherosclerosis obliterans of the lower extremities.
 - D. Endarteritis obliterans of the lower extremities.
 - E. Embolism in the left femoral artery.

8. A 58-year-old man is inpatient with embolism of small branches of pulmonary artery confirmed by angiography. The patient underwent prostatectomy 4 days ago. The treatment of choice will be:
 - A. Heparin therapy
 - B. Thrombolytic therapy
 - C. Indirect anticoagulants
 - D. Thrombectomy out of pulmonary artery

E. Venotonics introduction

9. A 65-year-old man complains of acute abdominal pain and giddiness. Objectively: the skin is pale; P: 120/min; BP: 70/40 mm Hg. The abdomen is soft, is moderately painful in mesogastrium where pulsating tuberos formation with unclear contours is being defined. ECG reveals ischemia of the myocardium in all parts of the heart. Initial diagnosis.

- A. Aneurysm of the abdominal aorta
- B. Aneurysm of the thoracic aorta
- C. Aneurysm of the thoracoabdominal aorta
- D. Aneurysm of the ascending aorta
- E. Aneurysm of the descending aorta

10. A patient with a massive gastrointestinal bleeding and clinical presentations of haemorrhagic shock the packed red cells transfusion and the frozen plasma through a system without filter has been started. During transfusion the patient become restless; an acute pain in the right half of the thoracic cage, dyspnoea, cough with foamy sputum and blood has appeared. What complication has developed in the patient?

- A. Thrombembolism of brain vessels
- B. Syndrome of massive haemotransfusion
- C. Thromboembolism of pulmonary artery branches
- D. Stagnation in the pulmonary circulation
- E. Acute heart failure

Protocol of Management of acute limb ischemia.

1. Unless emergent arteriography is performed, **heparin** should be administered immediately, once a diagnosis of acute arterial ischemia is made. An intravenous bolus of 80 units/kg followed by an intravenous infusion of 18 units/kg per hour is usually satisfactory. Partial thromboplastin time (PTT) should be maintained between 60 and 80 seconds.

2. **Surgical therapy**, such as embolectomy, should be performed as soon as possible in patients with an obvious embolus. **Embolectomy** can be done under local anesthesia if the patient cannot tolerate general anesthesia. Once the artery is isolated, a Fogarty catheter is passed proximally and distally to extract the embolus and associated thrombus. In some cases, intraoperative thrombolysis may be necessary because distal vessels may be thrombosed beyond the reach of the Fogarty catheter. Distal patency can be proved, if necessary, with an intraoperative arteriogram, depending on the status of distal vessels and pulses after embolectomy. In the leg, if adequate distal perfusion is not established and an angiogram demonstrates distal thrombus, the distal popliteal artery may be explored with selective passage of the embolectomy catheter into the anterior tibial, posterior tibial, and peroneal arteries. The arteriotomy can be closed with a patch graft if there is arterial narrowing. Bypass grafting may also be required if significant preexisting arterial disease in the affected segment is discovered.

1. **Catheter-related complications** can occur early or late. Early complications result from arterial wall trauma secondary to the balloon-tipped catheter and include arterial perforation and rupture, intimal dissection, and pseudoaneurysm formation. A late catheter-related complication is the development of accelerated atherosclerosis in the embolectomized vessel, probably due to endothelial denudation and medial injury.

2. **Reperfusion injury** occurs after reestablishment of arterial flow and leads to further tissue death. It results from the formation of oxygen-free radicals, which directly damage the tissue and cause white blood cell accumulation and sequestration in the microcirculatory system. This process, termed the **no-reflow phenomenon**, tends to prolong the ischemic interval because it impairs adequate nutrient flow to the tissue despite the restoration of axial blood flow. There is currently no proved therapy that limits reperfusion injury.

3. Myonephropathic syndrome occurs when the by-products of ischemic muscle, including potassium, lactic acid, myoglobin, and creatinine phosphokinase, are released into the systemic circulation after reperfusion. The electrolyte and pH changes can trigger dangerous arrhythmias, and precipitation of these toxic metabolites in the renal tubules can cause renal failure. The likelihood that a patient will develop myonephropathic syndrome relates to the duration of ischemia. In an attempt to combat this, some surgeons clamp the femoral vein and perform a transverse venotomy after lower-extremity arterial inflow is established. The first 250–500 mL of blood is discarded or aspirated to an autotransfusion system, which removes the hyperkalemic and acidotic plasma and allows return of the red blood cells. Aggressive hydration, diuresis promotion with mannitol (25 g i.v.), and intravenous infusion of bicarbonate [2–3 ampules of 7.5% NaHCO₃ (44.6 mEq/ampule) in 1 L 5% dextrose in water] to keep urine pH above 6.5 are helpful.

4. Compartment syndrome results when prolonged ischemia causes cell membrane damage with leakage of fluid into the interstitium. The edema results in extremely high intracompartmental pressures, particularly in the lower extremity. When these intracompartmental pressures exceed capillary perfusion pressure, further muscle and nerve necrosis ensues. A four-compartment **fasciotomy** should be performed when there is a concern for the possible development of a leg compartment syndrome. Fasciotomy should be routine in any patient with more than 6 hours of lower-extremity ischemia or in the presence of combined arterial and venous injuries. Leg fasciotomies usually are performed through two incisions, one anterolateral and another posteromedial. The skin is left open, to be closed either secondarily or by skin graft at a later time.

3. Medical therapy

1. High-dose heparinization (20,000-unit initial bolus followed by 2,000–4,000 units/hour) may be used in patients who are at extremely high risk for surgery and who have advanced ischemia with a nonviable extremity. The goal is to preserve as much tissue as possible by limiting progressive thrombosis.

2. Thrombolytic therapy may be useful in patients with clearly viable extremities in whom thrombosis is the likely underlying cause of their acute ischemia. Thrombolysis can frequently identify the underlying stenosis resulting in a surgical intervention for a definite therapy. A thrombolytic agent most commonly used is urokinase delivered via an intraarterial (IA) catheter directly into the clot. A loading dose of urokinase (3,500 units/kg) is given over 10 minutes IA, followed by an infusion of 900 units/kg/hour IA. Low-dose heparin administration can be maintained via the IA catheter sheath to prevent sheath thrombosis. Repeat arteriography is performed to gauge the results of treatment. During this procedure, the patient is usually monitored in the intensive care unit (ICU). Thrombin time, fibrinogen level, fibrin degradation product level, PTT, and complete blood count are followed closely to limit the risk of hemorrhage. In general, the likelihood of serious hemorrhagic complications increases when fibrinogen levels drop below 100 mg/dL and the PTT rises above 3–5 times normal. Once the artery is open, the patient can be managed either with systemic anticoagulation or with surgical intervention (i.e., operative arterial reconstruction, balloon angioplasty).

3. Percutaneous aspiration thromboembolectomy is an investigative technique and may prove useful as an adjunct to thrombolysis by decreasing clot volume. The usefulness of this device requires further study, and its use is not recommended at this time.

4. Follow-up care usually is directed at treating the underlying cause of the obstruction. Patients with mural thrombi or arrhythmias require long-term anticoagulation. The in-hospital mortality associated with embolectomy is as high as 20–30%, mostly due to coexistent cardiac disease.

Skill.

1. Carry out the Gondola's test and Samuels's test.
2. Carry out the Schamov's test.

4. Summing-up

5.Literature:

Basic.

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
6. RUTHERFORD’S VASCULAR SURGERY AND ENDOVASCULAR
7. THERAPY, 9th ed. Volume 1, Volume 2. Copyright © 2019 by Elsevier, Inc.

Additional:

- 1 Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
- 2 Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaudi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), & [2 More](#)

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners-> Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №9

Theme: " Chronic limb ischaemia."

Goal:

TO KNOW

1. Anatomical features of structure of major arteries of the lower extremities.
2. Clinics and diagnostics of obliterative arteriosclerosis of vessels of the lower extremities.
3. Variants of treatment of obliterative arteriosclerosis of vessels of the lower extremities.
4. Clinics and diagnostics of endarteritis obliterans.
5. Variants of treatment of endarteritis obliterans.
6. Clinics, diagnostics and treatment of Raynaud's disease.
7. Clinics and diagnostics of diabetic angiopathy of the lower extremities.
8. Treatment of diabetic angiopathy of the lower extremities.

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Basic concepts: obliterative arteriosclerosis, endarteritis obliterans, Raynaud's disease. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure of the class.

The main stages of class 5 features and content	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control%	Duration in minutes
Preparatory			Stage	
Organization of classes	level 2		Methodical development, slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	Videos, task 2 levels	25 min
Control of initial level of knowledge	level 2	Test control 2i3 level	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept of occlusive vascular lesions				
2. Osoblyvosti clinical course	level 3			
3. Modern methods of diagnosing arterial occlusive lesions				
4. Methods of surgical treatment	level 3			
Basic			Stage	
To provide curation of patient with arterial	level 3	Practical training	Case patients with arterial thrombosis,	40 min

disorders of the lower extremities			embolism and occlusive vascular disease	
Master the technique of determining the specific symptoms	level 3	Practical training	Algorithm determination symptoms	40 min
Master the methods of clinical research	level 3	Practical training	Algorithm objective obstezhannya patient	
inal			Stage	
Control and correction of knowledge and practical skills	level 3	Decision custom tasks	Test case studies of 3	15 min
Summary				
Assignments to following classes				2-3 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of obliterative arteriosclerosis, endarteritis obliterans, Raynaud's disease.
- Classification of obliterative arteriosclerosis, endarteritis obliterans, Raynaud's disease.
- Clinical manifestations of obliterative arteriosclerosis, endarteritis obliterans, Raynaud's disease.
- Additional examination methods for arterial thrombosis and embolism.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

1. A 63-year-old car salesman is having difficulty doing his job. He works at a large, suburban used-car lot which is about 3 blocks long. When he walks about 1/2 a block, he gets severe cramping pain in his right calf, and must stop and rest for the pain to go away. As soon as he has walked another 1/2 block, pain recurs. He is the sole supporter of his family and he is about to be fired. He does not smoke. Establish the initial diagnosis.

- A. Deep vein thrombosis
- B. Protruded intervertebral disk.
- C. Arthritis.
- D. Intermittent claudication, from vascular disease.
- E. Lerish's syndrome.

Explanation

Diagnosis: Intermittent claudication, from vascular disease.

2. A 72-year-old woman with severe COPD who requires home oxygen is unable to ambulate inside her home without experiencing severe left hip pain. She was hospitalized 1 year ago for a viral pneumonia and was ventilator-dependent at that time for 6 weeks. On examination, her blood pressure is 165/80 mm Hg. She has weakly palpable bilateral femoral pulses. An angiogram demonstrates severe aortoiliac disease involving bilateral iliac vessels. Which of the following is the most appropriate vascular procedure for this patient?

- a. Femorofemoral bypass
- b. Axillofemoral bypass
- c. Femoropopliteal bypass
- d. Aortobifemoral bypass
- e. Common femoral and profunda femoral endarterectomies

Explanation

The answer is **b**. (Townsend, pp 1963-1964.) Given her comorbidities, the patient should undergo axillofemoral bypass grafting. In a patient with severe symptoms of claudication that are interfering with his or her lifestyle, intervention is indicated. Axillofemoral bypass grafts are an alternative to aortofemoral procedures, but have a lower 5-year patency rate and should be reserved for high-risk patients with bilateral iliac disease or an infected aortic aneurysm or graft. In a young, healthy patient with unilateral iliac artery occlusive disease, when angioplasty is not a treatment option, an aortofemoral bypass offers excellent long-term relief. Aortobifemoral bypass, while clearly the most risky of the treatment options offered, provides the best long-term patency. In elderly patients with severe comorbidities who are considered at high risk for complications, extra-anatomic bypasses (femorofemoral or axillofemoral bypasses) offer fair long-term patencies while not subjecting the patient to the risks of general anesthesia. Femorofemoral bypass offers the additional benefit of not disturbing sexual function; however, femorofemoral bypass is not an option in a patient with bilateral iliac artery disease. Neither common femoral and profunda femoral endarterectomies nor femoropopliteal bypass is beneficial in this patient who has aortoiliac disease.

3. A 70-year-old woman comes to the office because she has had claudication in her left hip and buttock during the past eight months. She says the symptoms occur after she walks approximately one block. Medical history includes type 2 diabetes mellitus, hypertension, and hyperlipidemia. Daily medications include amlodipine, atenolol, metformin, glyburide, and rosuvastatin. The patient has a 40-pack-year history of cigarette smoking. Physical examination shows diminished left femoral pulse and absent left popliteal pulse. Right femoral and popliteal pulses are intact. Which of the following is the most likely site of arterial stenosis in this patient?

- (A) Abdominal aorta
- (B) Left common iliac artery
- (C) Left deep femoral artery
- (D) Left popliteal artery
- (E) Left superficial femoral artery

Explanation

The correct answer is Option (B), left common iliac artery. The patient has claudication in an anatomic location in which blood is supplied from the left common iliac artery. Option (A), abdominal aorta, is incorrect because the patient's symptoms are only occurring on the left side, not bilaterally, and the patient's pulses on the right side are not diminished. Option (C), left deep femoral artery, Option (D), left popliteal artery, and Option (E), left superficial femoral artery, are all incorrect because stenosis in these sites would cause claudication in the left thigh or calf.

4. A 58-year-old man presents with pain in the left leg after walking more than one block that is relieved with rest. On physical examination, distal pulses are not palpable in the left foot and there is dry gangrene on the tip of his left fifth toe. An ankle-brachial index on the same side is 0.5. Which of the patient's symptoms or signs of arterial insufficiency qualifies him for reconstructive arterial surgery of the left lower extremity?

- a. Ankle-brachial index less than 0.7
- b. Rest pain
- c. Claudication
- d. Absent palpable pulses
- e. Toe gangrene

Explanation

The answer is e. (Brunicardi, pp 756-759.) The major threat to patients with arterial occlusive disease is limb loss. Rest pain and gangrene represent advanced stages of arterial insufficiency and warrant arterial reconstructive surgery whenever clinically feasible. This patient does not have rest pain which is defined as persistent pain in the extremity. Claudication, in most cases, reflects mild ischemia; the majority of affected patients are successfully managed without surgery. Most will stabilize or improve with development of increased collateral blood flow following institution of a program of daily exercise, cessation of smoking, and weight loss. Ankle-brachial index is a useful preoperative tool but does not by itself determine whether someone is a candidate for revascularization. Palpable pulses are usually absent in patients with claudication. Vasodilator drugs have been shown to have little benefit in the conservative management of intermittent claudication.

5. A 35-year-old man, a smoker, complains of periodic pains in fingers and toes after general overcooling of extremities that aggravate at excitement and during the cold year period. Objectively: the fingers and toes have cyanotic colour with insignificant oedema. Pulsation on the main arteries is saved. Blood glucose: 5,5 mmol/l. Establish the initial diagnosis.

- A. Endarteritis obliterans
- B. Thrombangiitis obliterans
- C. Raynaud's disease
- D. Atherosclerosis obliterans
- E. Nodulated periarteritis

6. A 65-year-old woman who is ill for 30 years complains of periodic pains in the legs intensifying at walking, in particular during the cold year period. Objectively: the toes have got a cyanotic colour, feet and legs are cold, skin on them is thin, and pulsation on the femoral and popliteal arteries is sharply weakened. The most probable diagnosis:

- A. Thrombangiitis obliterans
- B. Atherosclerosis obliterans
- C. Endarteritis obliterans
- D. Raynaud's disease
- E. Nodulated periarteritis

7. A 59-year-old man is having difficulty doing his job. He works at a large, suburban used-car lot which is about 3 blocks long. When he walks about 1/2 a block, he gets severe cramping pain in his right calf, and must stop and rest for the pain to go away. As soon as he has walked another 1/2 block, pain recurs. The diagnosis of intermittent claudication, from vascular disease is established. Choose the most rational management.

- A. Angioplasty and stenting
- B. Popliteal- leg autovenous shunting
- C. Implantation of the femoro-popliteal prosthesis
- D. Conservative treatment
- E. Sympathectomy

Explanation

Management:

- Surgery for intermittent claudication is palliative. If symptoms do not interfere with lifestyle, surgery is not indicated.
- The natural history of intermittent claudication is unpredictable; thus there is no role for “prophylactic surgery.” Tobacco use however, leads to predictable progression. Cessation of smoking is imperative.
- Start with Doppler studies looking for a pressure gradient. If there is one, do arteriograms, and provide the appropriate vascular reconstruction.
- Revascularization options include: angioplasty and stenting (for short segments), saphenous vein bypass (for obstructions below the common femoral) and prosthetic grafts (when the aorta has to be the proximal vessel).
- If there is no pressure gradient by Doppler studies, the disease is in the small vessels, and not amenable to surgery.

8. A 60-year-old man complains of a pain in the right limb which arises at walking; without stopping he can walk about 150m. He marks cold and numbness sensation in the right foot. Objectively: the skin of toes of the right foot is pale, its temperature is decreased. Pulsation on the femoral arteries is satisfactory; on the right popliteal one it is absent. What is the most probable diagnosis?

- A. Lericq's syndrome
- B. Acute thrombophlebitis of subcutaneous vein on the right
- C. Thrombangitis obliterans
- D. Atherosclerosis obliterans of vessels of the lower extremities, an occlusion of the popliteal-femoral segment on the right
- E. Endarteritis obliterans

Algorithm of Physical examination.

A. Evaluation of the peripheral pulses should include the femoral, popliteal, posterior tibial, and dorsalis pedis

arteries. Pallor on elevation of the extremity and rubor when the limb is dependent is common.

B. Other signs of chronic arterial insufficiency include brittle nails, scaling skin, hair loss on the foot and lower leg,

cold feet, cyanosis, and muscle atrophy. The feet should be inspected for skin breakdown or ulceration.

C. Bruits may be auscultated distal to the arterial obstruction. Abdominal examination for a “pulsatile mass” should be performed because of the association between abdominal aortic aneurysm and peripheral arterial disease.

D. Ankle-brachial index is an effective screening tool. The ankle-brachial index is calculated by dividing the ankle pressure by the brachial systolic pressure.

1. The normal ABI is above 1.0, since the pressure is higher in the ankle than in the arm.
2. An ABI below 0.9 has a 95 percent sensitivity for detecting angiogram-positive peripheral vascular disease.
3. An ABI of 0.40 to 0.90 suggests a degree of arterial obstruction often associated with claudication.
4. An ABI below 0.4 represents advanced ischemia
5. In patients with an abnormal ankle-brachial index, testing with segmental arterial pressures and a pulse volume recording before and after exercising to the point of absolute claudication are indicated.

Ankle-Brachial Index

Interpretation Normal >1

Abnormal <0.95

Intermittent claudication 0.4-0.9

Severe disease/ischemia less than 0.4

E. Segmental arterial pressures. The proximal lower extremity pressures should be equal to or greater than the upper extremity pressures, and the drop in Doppler pressure between segments no greater than 20 mm Hg. These studies help predict the location and severity of the disease.

4. Summing-up

5. Literature:

Basic.

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020 RUTHERFORD'S VASCULAR SURGERY AND ENDOVASCULAR

Additional:

- 1 Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
- 2 Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunickardi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), & 2 More

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я

4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners-> Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №10

Theme: " Diabetic foot. "

2. Goal:

To Know:

- Current views on the etiology and pathogenesis of diabetic foot syndrome.
- Classification.
- Clinical presentation and instrumental examination of patients.
- Differential diagnosis. Indication. Indications and methods of surgical interventions.
- Postoperative management of patients.
- Possible postoperative complications.

Basic concepts: diabetic foot. Classification, presentation. Differential diagnosis. Methods of surgical interventions

Equipment - Multimedia;

Plan

Plan and organizational structure of the classes.

The main stages of occupation of their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical development, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 Level Solutions to clinical and situational problems	Tasks Level 2, Level 3 tests, tasks Level 3	
1.Definition				

concept diabetic foot syndrome				
2. Clinical course	level 3			
3. Modern methods of diagnosis Diabetic foot syndrome				
4. Methods of conservative and surgical treatment	level 3			
Main Stage				
To provide examination of patient with Diabetic foot syndrome	level 3	Practical training	Case patients with diabetic foot	40 min
Master methodological wild determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical examination	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
The control and correction of knowledge and practical skills t	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing Homework				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of diabetic foot syndrome.
- Classification of diabetic foot syndrome.
- Clinical manifestations of diabetic foot syndrome.
- Additional examination methods for purulent processes.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.

«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

1. A 39-year-old patient has been suffering from diabetes mellitus for 10 years. The last year he marks the coldness of the toes, pain and a feeling of numbness. Objectively: the skin of the lower extremities is dry, elegant, cold to the touch, the pulsation in the femoral and popliteal arteries is saved. What is the most likely diagnosis?

- A * Diabetic microangiopathy of the vessels of the lower extremities
- B Diabetic macroangiopathy of the vessels of the lower extremities
- C Raynaud's disease
- D obliterating atherosclerosis of the vessels of the lower extremities
- E obliterating endarteritis of the vessels of the lower extremities

2. You were called to a 65-year-old patient who has been complaining for a month about a significant increase in pain in his left foot. On examination: pallor of the skin of the lower extremities, on palpation of the extremity from the fingers to the middle third of the lower leg is cold, the skin is dry, muscle hypotrophy is noted; 1 - 2 fingers of the left foot are purple-bluish, mummified. She has a history of diabetes mellitus. What is your diagnosis?

- A. + Diabetic angiopathy of the vessels of the lower extremities
- B. Obliterating atherosclerosis of the lower extremities
- C. Obliterating endarteritis of the lower extremities
- D. Raynaud's disease
- E. Postthrombophlebitic disease of the lower extremities

3. A 39-year-old patient has been suffering from diabetes mellitus for 10 years. Last year he notes coldness of the toes, pain and a feeling of numbness. Objectively: the skin of the lower extremities dry, graceful, cold on palpation, pulsation on the femoral and popliteal arteries is saved. What is the most likely diagnosis?

- A * Diabetic microangiopathy of the vessels of the lower extremities
- B Diabetic macroangiopathy of the vessels of the lower extremities
- C Raynaud's disease
- D obliterating atherosclerosis of the vessels of the lower extremities
- E obliterating endarteritis of the vessels of the lower extremities

3. Formation of professional skills and abilities
- Patient examination;

Protocol for treatment of diabetic foot ulcers.

Amputation

Amputation remains a major source of morbidity, and occasionally mortality, among patients with diabetes because of the high incidence of foot ulcers [6], [12]. Diabetes accounts for >60% of all nontraumatic lower-leg amputations [13]. The risk of lower-limb amputation is 30 to 40 times higher in the diabetic, as opposed to the nondiabetic, population [14]. Surgical revision of initial amputations, and multiple amputations to contralateral or ipsilateral limbs, are also common in patients who

Costs

The expenses associated with diabetic foot ulcers that remain unhealed are substantial, both for the patient and the health care system [6]. In 2002 alone, it is estimated that the costs associated with diabetes in the United States were \$132 billion; \$92 billion of this total was related to direct medical expenditures for these patients; the remaining \$40 billion was related to lost productivity [17]. Diabetes results in higher rates of lost work time, disability, and premature mortality.

Neuropathy

Nerve damage in diabetes affects the motor, sensory, and autonomic fibers. Motor neuropathy causes muscle weakness, atrophy, and paresis. Sensory neuropathy leads to loss of the protective sensations of pain, pressure, and heat. The absence of pain leads to many problems in the insensate foot, including ulceration, unperceived trauma, and Charcot neuroarthropathy. The patient may not seek treatment until after the wound has advanced. A combination of sensory and motor dysfunction can cause the

Initial evaluation

Diabetic foot ulcers are chronic wounds that do not heal unless treated actively and, in the case of plantar ulcers, offloaded; in neuropathic ulcers it is often what is taken off the wound that is most important (eg, callus, pressure). Chronic foot wounds fail to heal in an orderly manner and result in a consequent compromise of anatomic and functional integrity because of an underlying physiologic impairment (eg, decreased angiogenic response, neuropathy, and ischemia) [24]. Because patients

Osteomyelitis

Osteomyelitis is present in many diabetic foot ulcers [38] and is treated most effectively by surgical removal of the infected bone. After the infected bone is removed, the patient requires only antibiotics for control of bacteria in the surrounding soft tissue. Demineralization, periosteal reaction, and bony destruction—the classic radiographic triad of osteomyelitis—appear only after 30% to 50% of bone destruction, a process that takes up to 2 weeks [39]. In addition, soft-tissue infection is

Debridement

Debridement is the first and most important step in healing a diabetic ulcer [4]. The foundation of comprehensive care for diabetic foot ulcers is removal of all nonviable, infected tissue (including bone) from open wounds, as well as surrounding calluses, until a new border of healthy, bleeding soft tissue and uninfected bone is created. More extensive ulcers should be debrided in the operating room.

Surgical debridement with a sharp knife (even if down to the bone) can remove all devitalized

Offloading

It has been established that minor traumas, such as repetitive stress and shoe pressure, are significant components of the etiology in the pathway to ulcerations [8], [21]. Peak plantar pressures are highest in the forefoot, compared with the rear foot and medial arch [53]. Reducing pressure applied to the wound, especially in the forefoot, is essential for optimal treatment. Concurrently, irregular biomechanics, such as those caused by limited joint mobility and/or structural foot deformity,

Conclusion

All diabetic foot ulcers without ischemia or osteomyelitis should be expected to heal. The status of a wound should not be judged by its appearance. A wound can “look good” but still be a source of infection. Treatment success should be judged by objective measurement of the wound's healing rate. If all diabetic ulcers are recognized early and treated comprehensively with a regimen that includes proper consideration of the therapies described in these guidelines, then the incidence of

4. Summing up: Announcement of applicants' grades on the theme.

5. Literature:

Basic:

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.

4. Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
6. General Surgery=Загальна хірургія: Підручник для мед. ун -тів., інст., акад. Затверджено МОН / За ред. С.Д. Хімича, М.Д. Желіби. — К., 2019. — 536 с.
7. RUTHERFORD'S VASCULAR SURGERY AND ENDOVASCULAR
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9. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія: Підручник для мед. ун-тів, інст., акад. Рекомендовано Вченою радою Буковинського НМУ / О.М. Слободян, В.Ю. Єршов, Г.Ю. Костюк, В.І. Півторак; за ред. В.Ю. Єршова. — К., 2018. — 504 с.

Additional:

1. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія: Підручник для мед. ун-тів, інст., акад. Рекомендовано Вченою радою Буковинського НМУ / О.М. Слободян, В.Ю. Єршов, Г.Ю. Костюк, В.І. Півторак; за ред. В.Ю. Єршова. — К., 2018. — 504 с.
2. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition
3. Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
4. Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaudi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), & 2 More

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners-> Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №11

Theme: " Pulmonary artery embolism."

Goal:

- know variants of pulmonary atery embolism and developments of haemodynamic infringements.
- know the basic attributes of these diseases.

- know additional methods of diagnostics.
- know opportunities of operative defects correction , indications to them and terms of performance of operation.

Basic concepts: pulmonary artery embolism. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure.

The main stages of occupation of their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control%	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical development, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level Solutions to common clinical situation tasks	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept PAE				
2. Clinical course	level 3			
3. Modern methods of PAE				
Main stage				
To provide curation of patient With deep vein thrombosis	level 3	Practical training	Case patients with PAE	40 min
Master methodological determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical and para-clinical investigations	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and practical skills	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing				

Homework next session				2 min
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1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of pulmonary artery embolism.
- Classification of pulmonary artery embolism.
- Clinical manifestations of pulmonary artery embolism.
- Additional examination methods for pulmonary artery embolism.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical, laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical, laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical, laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical, laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

1. On the seventh post-operative day after pinning of a broken hip, a 72-year-old lady develops sudden, severe chest pain and shortness of breath. The pain is accentuated by deep breathing. She is anxious, diaphoretic and tachycardic, and she has prominent, visibly distended veins in her neck and forehead. Diagnosis:

- F. Pulmonary embolus
- G. Atelectasis
- H. Pulmonary edema
- I. Pneumonia
- J. Myocardial infarction

Response

Timing of postop chest pain gives the first clue: MI occurs on day one or two o PE occurs after 5 to 7 days
Doubt the diagnosis of PE if CVP is low, or blood gases do not show hypocapnia

2. On the seventh post-operative day after pinning of a broken hip, a 72-year-old lady develops sudden, severe chest pain and shortness of breath. The pain is accentuated by deep breathing. She is anxious, diaphoretic and tachycardic, and she has prominent, visibly distended veins in her neck and forehead. Diagnosis is Pulmonary embolism. Management.

- a. Pulmonary angiography
- b. Plain X-ray
- c. Ultrasound
- d. CT scan
- e. Contrast X-ray of the oesophagus

Response

• Pulmonary angio is the “gold standard,” ventilation-perfusion scan is more commonly done. Confirm the diagnosis with blood gases (that will show hypoxemia and hypocapnia), and ventilation-perfusion scan.

If PE’s recur while properly anticoagulated, place a Greenfield vena cava filter.

2. A 65-year-old woman has a life-threatening pulmonary embolus 5 days following removal of a uterine malignancy. She is immediately heparinized and maintained in good therapeutic range for the next 3 days, then passes gross blood from her vagina and develops tachycardia, hypotension, and oliguria. Following resuscitation, an abdominal CT scan reveals a major retroperitoneal hematoma.

You should now

- A. Immediately reverse heparin by a calculated dose of protamine and place a vena cava filter (e.g., a Greenfield filter)
- B. Reverse heparin with protamine, explore and evacuate the hematoma, and ligate the vena cava below the renal veins
- C. Switch to low-dose heparin
- D. Stop heparin and observe closely
- E. Stop heparin, give fresh frozen plasma (FFP), and begin warfarin therapy

Response

The answer is **A**. In a heparinized patient with significant life-threatening hemorrhage, immediate reversal of heparin anticoagulation is indicated. Protamine sulfate is a specific antidote to heparin and should be given as 1 mg for each 100 U heparin if hemorrhage begins shortly after a bolus of heparin. For a patient (such as this) in whom heparin therapy is ongoing, the dose should be based on the half-life of heparin (90 min). Since protamine is also an anticoagulant, only half the calculated circulating heparin should be reversed. The protaminization should be followed by placement of a percutaneous vena cava filter (Greenfield filter). In this critically ill patient, exploration of the retroperitoneal space would be surgically challenging and meddlesome.

4 Prophylactic regimens of documented benefit in decreasing the risk of postoperative thromboembolism include

- A. Early ambulation
- B. External pneumatic compression devices placed on the upper extremities
- C. Elastic stockings
- D. Leg elevation for 24 h postoperatively
- E. Dipyridamole therapy for 48 h postoperatively

Response

The answer is **B**. The problem of deep vein thrombosis and pulmonary embolism is significant in general surgery. There are approximately 2.5 million episodes of deep vein thrombosis and 600,000 pulmonary embolic events that result in 200,000 deaths annually.

The problem is exacerbated by the disorder’s frequent unheralded progression— only 20–25% of fatal pulmonary emboli are suspected clinically by the physician or manifest by classic signs or symptoms. The fact that most deaths due to pulmonary embolism occur before effective therapy can be started highlights the importance of preventive measures. Several documented factors help identify those at increased risk, including age greater than 40, obesity, malignancy, venous disease, congestive heart failure and atrial fibrillation, and prolonged bed rest. Virchow initially attributed venous thrombosis to the combination of venous stasis, hypercoagulability, and endothelial injury. The first two conditions are exacerbated by operative positioning and stress such that 25% of patients at moderate risk will develop venous thromboembolism, 50% within 24 h and 80% within 72 h postoperatively. The recommendation for prophylaxis in those at high risk is preoperative anticoagulation with warfarin. No prophylaxis is recommended for those at low risk (e.g., those less than age 40 with normal weight and no venous disease). Prophylactic regimens for those at moderate risk are basically chemical or mechanical, and the best two, which have equivalent effectiveness, are representative of each type. First, low-dose heparin

(5000 U) started 2 h preoperatively and continued every 12 h postoperatively will decrease the risk of deep vein thrombosis from 25 to 7% and of major pulmonary embolus from 6 to 0.6%. External pneumatic compression devices not only obviate venous stasis, but they also have a systemic effect on coagulation, such that use on the arms also significantly reduces venous thromboembolism of the lower extremities. Early ambulation, elastic stockings, leg elevation, and dipyridamole (Persantine) alone have not been documented to be effective.

5. An obese 50-year-old woman undergoes a laparoscopic cholecystectomy. In the recovery room she is found to be hypotensive and tachycardic. Her arterial blood gases reveal a pH of 7.29, partial pressure of oxygen of 60 kPa, and partial pressure of CO₂ of 54 kPa. The most likely cause of this woman's problem is

- A. Acute pulmonary embolism
- B. CO₂ absorption from induced pneumoperitoneum
- C. Alveolar hypoventilation
- D. Pulmonary edema
- E. Atelectasis from high diaphragm

Response

The answer is **C**. Because of the ease with which carbon dioxide diffuses across the alveolar membranes, the Pa CO₂ is a highly reliable indicator of alveolar ventilation. In this postoperative patient with respiratory acidosis and hypoxemia, the hypercarbia is diagnostic of alveolar hypoventilation. Acute hypoxemia can occur with pulmonary embolism, pulmonary edema, and significant atelectasis, but in all those situations the CO₂ partial pressures should be normal or reduced as the patient hyperventilates to improve oxygenation. The absorption of gas from the peritoneal cavity may affect transiently the Pa CO₂, but should have no effect on oxygenation.

6. If a patient suffered a pulmonary arterial air embolism during an open thoracotomy, the anesthesiologist's most likely observation would be

- A. Unexpected systemic hypertension
- B. Rising right atrial filling pressures
- C. Reduced systemic arterial oxygen saturation
- D. Rising systemic CO₂ partial pressures
- E. Falling end-tidal CO₂

Response

The answer is **E**. Air carried into the pulmonary arterial vasculature creates an abnormal blood-air interface that leads to denaturing of plasma proteins and creates amorphous proteinaceous and cellular debris and endothelial injury. The ensuing increased capillary permeability results in alveolar flooding. The occlusion of pulmonary vessels increases the proportion of ventilated but underperfused alveoli. The increment in dead space results in a drop in end-tidal carbon dioxide.

7.. The etiologic factor implicated in the development of pulmonary insufficiency following major nonthoracic trauma is

- A. Aspiration
- B. Atelectasis
- C. Fat embolism syndrome
- D. Fluid overload
- E. Pneumonia

Response

The answer is **C**. Posttraumatic pulmonary insufficiency in the absence of significant thoracic trauma has been attributed to a wide variety of etiologic agents, including aspiration, simple atelectasis, lung contusion, fat embolism, pneumonia, pneumothorax, pulmonary edema, and pulmonary thrombo-

embolism. In a landmark monograph entitled Respiratory Distress Syndrome of Shock and Trauma, Blaisdell and Lewis identified fat embolism syndrome as the etiologic factor. The mechanism of this condition appears to be pulmonary alveolar injury due to the mobilization of free fatty acids in the blood as an adrenergic response to trauma, rather than pulmonary injury from embolization of fat globules from fractured bones, as was originally thought.

9. An abnormal ventilation-perfusion ratio (Q_s/Q_r) in the postoperative patient has been associated with
- Pulmonary thromboembolism
 - Lower abdominal surgery
 - Starvation
 - The upright position
 - Increased cardiac output

Response

The answer is A. Abnormalities of ventilation-perfusion ratio result from the shunting of blood to a hypoventilated lung or from the ventilation of hypoperfused regions of lung tissue. When this imbalance is extreme, as following massive pulmonary thromboembolism, the effect is life-threatening hypoxemia. Other common predisposing factors in the postoperative patient that contribute to this maldistribution include the assumption of a supine position, thoracic and upper abdominal incisions, obesity, atelectasis, and reduced cardiac output.

8. Indications for placement of the device pictured in the abdominal x-ray shown below include



- A. Recurrent pulmonary embolus despite adequate anticoagulation therapy
- B. Axillary vein thrombosis
- C. Pulmonary embolus in a patient with a perforated duodenal ulcer
- D. Pulmonary embolus due to deep vein thrombosis of the lower extremity that occurs 2 wk postoperatively
- E. Pulmonary embolus in a patient with metastatic pancreatic carcinoma

Response

The answer is A. The Greenfield filter pictured on the x-ray is used to interrupt migration of emboli to the lungs from the veins below the level of the filter. It is indicated in patients who sustain a recurrent pulmonary embolus despite adequate anticoagulant therapy or in patients with pulmonary emboli who cannot receive anticoagulants because of a contraindication (e.g., bleeding ulcer, intracranial hemorrhage). The filter is not used in patients who sustain a single pulmonary embolus. It is placed in the inferior vena cava just below the renal veins and therefore

would not be effective for emboli that arise cephalad to its position. Despite the hypercoagulable state seen in some patients with metastatic pancreatic cancer, anticoagulation can still be used as a first-line defense

4. Summing-up

5.Literature:

Basic.

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Березницький Я. С. (за ред.)General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб. з вищої мед.освіти МОЗ України”: 2020/ 328 с.
5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
6. RUTHERFORD’S VASCULAR SURGERY AND ENDOVASCULAR
7. SEIDEL’S GUIDE TO PHYSICAL EXAMINATION: AN INTERPROFESSIONAL APPROACH. Copyright © 2019 by Elsevier, Inc.

Additional:

- 1 Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
- 2 Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaudi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), & 2 More

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров’я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров’я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners-> Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №12

Theme: " Aortal aneyrysm and aneyrysm of peripheral arteries."

Goal:

To Know:

- The anatomical structure of the arterial system, circulatory physiological characteristics;
- Methods of heart examination, percussion, auscultation,
- Instrumental methods of examination,
- Tactics and methods of treatment.

Basic concepts: Aortal aneyrysm and aneyrysm of peripheral arteries. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure.

The main stages of class 6 features and content	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control%	Duration in minutes
Preparatory			Stage	
Organization of classes	level 2		Methodical development, slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	Videos, task 2 levels	25 min
Control of initial level of knowledge	level 2	Test control 2i3 level	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept of AAA				
2. Clinical course	level 3			
3. Modern methods of AAA				
4. Methods of surgical treatment	level 3			

Basic			Stage	
To provide examination of patient with arterial disorders of the lower extremities	level 3	Practical training	Case patients with AAA	40 min
Master the technique of determining the specific symptoms	level 3	Practical training	Algorithm determination symptoms	40 min
Master the methods of clinical examination	level 3	Practical training	Algorithm objective examination patient	
Final			Stage	
Control and correction of knowledge and practical skills	level 3	Decision custom tasks	Test case studies of 3	15 min
Summary				
Assignments for following classes				2-3 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of Aortal aneyrsm and aneyrsm of peripheral arteries.
- Classification of Aortal aneyrsm and aneyrsm of peripheral arteries.
- Clinical manifestations of Aortal aneyrsm and aneyrsm of peripheral arteries.
- Additional examination methods for Aortal aneyrsm and aneyrsm of peripheral arteries.
- Conservative treatment
- Surgaical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

1. A 65-year-old man complains of acute abdominal pain and giddiness. Objectively: the skin is pale; P: 120/min; BP: 70/40 mm Hg. The abdomen is soft, is moderately painful in mesogastrium where pulsating tuberos formation with unclear contours is being defined. ECG reveals ischemia of the myocardium in all parts of the heart. Initial diagnosis.
 1. Aneurysm of the abdominal aorta
 2. Aneurysm of the thoracic aorta
 3. Aneurysm of the thoracoabdominal aorta
 4. Aneurysm of the ascending aorta
 5. Aneurysm of the descending aorta
2. A 76-year-old woman is admitted with back pain and hypotension. A CT scan (shown below) is obtained, and the patient is taken to the operating room. Three days after resection of a ruptured abdominal aortic aneurysm, she complains of severe, dull left flank pain and passes bloody mucus per rectum. The diagnosis that must be immediately considered is:



1. Staphylococcal enterocolitis
 2. Diverticulitis
 3. Bleeding AV malformation
 4. Ischemia of the left colon
 5. Bleeding colonic carcinoma
3. . A 72-year-old man undergoes resection of an abdominal aneurysm. He arrives in the ICU with a core temperature of 33°C (91.4°F) and shivering. The physiologic consequence of the shivering is
 1. Rising mixed venous oxygen saturation
 2. Increased production of carbon dioxide
 3. Decreased consumption of oxygen
 4. Rising base excess
 5. Decreased minute ventilation
 4. During evaluation for the repair of an expanding abdominal aortic aneurysm, a patient is discovered to have a horseshoe kidney. The optimum surgical approach would be
 1. Midline abdominal incision, preservation of the renal isthmus
 2. Midline abdominal incision, division of the renal isthmus
 3. Retroperitoneal approach, implantation of anomalous renal arteries
 4. Nephrectomy, repair of aneurysm, chronic dialysis
 5. Repair of aneurysm after autotransplantation of the kidney into the iliac fossa
 5. An 80-year-old man is found to have an asymptomatic abdominal mass. An arteriogram is obtained, which is pictured below. This patient should be advised that



- A. Surgery should be performed, but a mortality of 20% is to be anticipated
- B. Surgery should be performed only if symptoms develop
- C. Surgery will improve his 5-year survival
- D. Surgery this extensive should not be performed in a patient of his age
- E. Surgery should be performed only if follow-up ultrasound demonstrates increasing size

Explanation

The answer is C. Most abdominal aortic aneurysms are asymptomatic and are discovered on palpation by a physician. A radiograph of the abdomen is useful in demonstrating the aneurysm if there is calcification in the walls. Ultrasound is generally the first diagnostic procedure in confirming the presence of an aneurysm, with arteriography being performed if the aneurysm is considered large enough to require resection (greater than 5 cm in diameter). Recently CT scan has been found to be useful as a preoperative study in patients suspected of having aneurysms. Surgery should be performed despite the absence of symptoms and can be carried out with a mortality of less than 5%. With leaking or ruptured aneurysms, the operative mortality associated with this emergency situation is upward of 75%. The patient's age is not a contraindication to surgery, because several studies have demonstrated a low mortality (less than 5%) and satisfactory long-term survival and quality of life in elderly, even octogenarian, patients.

6. A 72-year-old man is found on physical exam to have a 6cm. pulsatile mass in the abdomen, located between the xiphoid and the umbilicus. The mass is not tender, and the patient is otherwise completely asymptomatic. Establish the initial diagnosis.

- A. Chronic pancreatitis
- B. Acute pancreatitis
- C. Pancreatic cancer
- D. Acute intestinal obstruction
- E. Abdominal aortic aneurysm

Explanation

Diagnosis: Abdominal aortic aneurysm

7, A 68-year-old man is found on physical exam to have a 6cm. pulsatile mass in the abdomen, located between the xiphoid and the umbilicus. The mass is not tender, and the patient is otherwise completely asymptomatic. The initial diagnosis of abdominal aortic aneurysm is established. Choose the correct management.

- A. Conservative treatment

- B. Surgery should be performed only if symptoms develop
- C. Surgery has to be done as a super-emergency
- D. Surgery this extensive should not be performed in a patient of his age
- E. Surgery should be performed only if follow-up ultrasound demonstrates increasing size

Explanation

Management:

- Size is the key-determining factor of the probability of rupture, and thus the need for elective repair.
- Verify precise measurements with sonogram or CT scan. If indeed the aneurysm is 6 cm. in diameter, do elective surgical repair.
- Under 4 cm, watchful waiting is appropriate.
- Over 6 cm, repair should be done.
- Aneurysm tender to palpation is going to rupture within 1 to 2 days. Repair immediately.
- Excruciating back pain in a patient with an abdominal aortic aneurysm means the aneurysm is already rupturing (leaking retroperitoneally, and about to blow up into the peritoneal cavity). Surgery has to be done as a super-emergency.

8. A 45-year-old man with poorly controlled hypertension presents with severe chest pain radiating to his back. An ECG demonstrates no significant abnormalities. A CT scan of the chest and abdomen is obtained, which demonstrates a descending thoracic aortic dissection extending from distal to the left subclavian takeoff down to above the iliac bifurcation. A Foley catheter is placed, and urine output is 30 to 40 cc/h. His feet are warm, with less than 2-second capillary refill. Which of the following is the most appropriate initial management?

- a. Emergent operation for repair of the aortic dissection
- b. Angiography to confirm the diagnosis of aortic dissection
- c. Echocardiography to rule out cardiac complications
- d. Initiation of a β -blocker
- e. Initiation of a vasodilator such as nitroprusside

The answer is **d.** (Brunnicardi, pp 689-695.) The initial treatment for a descending aortic dissection is to reduce the rate of change in blood pressure and to reduce shear on the aortic wall, which is achieved with β -blockade. Nitroprusside may be added after β -blockade has been achieved. Indications for operative intervention for a descending aortic dissection are end-organ failure (renal failure, lower extremity ischemia, intestinal ischemia), inadequate pain relief despite optimal medical therapy, and rupture or signs of impending rupture (increasing diameter or periaortic fluid).

9. A 59-year-old man is found to have a 6-cm thoracoabdominal aortic aneurysm which extends to above the renal arteries for which he desires repair, but he is concerned about the risk of paralysis postoperatively. Which of the following maneuvers should be employed to decrease the risk of paraplegia after repair?

- a. Infusion of a bolus of steroids immediately postoperatively with a continuous infusion for 24 hours
- b. Maintenance of intraoperative normothermia
- c. Clamping of the aorta proximal to the left subclavian artery
- d. Cerebrospinal fluid (CSF) drainage
- e. Extracorporeal membrane oxygenation

The answer is **a.** (Brunnicardi, pp 678-679.) Operative intervention is usually recommended for thoracic aortic aneurysms greater than 5 or 6 cm in diameter or those that are increasing in size. Spinal

cord ischemia can result in paraplegia with a risk of 5% to 15%, depending on the extent of the repair. Various strategies that have been employed to prevent spinal cord ischemia include aggressive reattachment of segmental intercostal and lumbar arteries, minimizing cross-clamp time (moving the clamp sequentially more and more distally as branches are reattached), hypothermia, moderate systemic heparinization, left heart bypass, and cerebrospinal fluid drainage (using a lumbar drain). The rationale for cerebrospinal fluid drainage is that it decreases the pressure on the blood supply to the spinal cord and therefore improves perfusion. Postoperative steroids do not reduce the risk of paraplegia.

10. For the first 6 hours following a long and difficult surgical repair of a 7-cm abdominal aortic aneurysm, a 70-year-old man has a total urinary output of 25 mL since the operation. Which of the following is the most appropriate diagnostic test to evaluate the cause of his oliguria?

- a. Renal scan
- b. Aortogram
- c. Left heart preload pressures
- d. Urinary sodium concentration
- e. Creatinine clearance

The answer is **c.** (Townsend, pp 348-349.) By far the most likely cause of the oliguria observed in this patient is hypovolemia. Volume status would be best assessed by placing a Swan-Ganz catheter to measure the preload pressures in the left atrium (by inference from the pulmonary capillary wedge pressures). Patients who undergo long, difficult operations in large surgical fields collect third-space fluids and become intravascularly depleted despite large volumes of intravenous fluid and blood replacement. The proper management usually involves titrating the cardiac output by providing as much fluid as necessary to keep the wedge pressures near 15 mm Hg. The other studies listed might become useful if urinary flow remains depressed after optimal cardiac output has been achieved, but in view of the probability of hypovolemia, they are not indicated as first diagnostic studies.

Algorithm of Diagnostic methods and Preoperative assessment.

- Physical examination is not a very exact method of detecting or determining the size of an AAA. A plain abdominal and lateral spine X-ray may show the calcified rim of an aneurysm but it is only useful in 50% of patients. The diagnostic methods currently used to confirm the diagnosis of AAA are ultrasonography, CT and magnetic resonance imaging (MRI).
- Real-time or B-mode ultrasonography is a non-invasive investigation that gives anatomical detail of the vessel wall and provides an accurate measurement of aneurysm size. It is the modality of choice for initial evaluation of pulsatile abdominal masses and for screening of AAA. It is less reliable for evaluation of the renal and iliac arteries.
- CT with or without contrast enhancement provides more information than ultrasonography; in particular, the relationship between the renal arteries and the AAA can be established. This modality is also useful for detecting retroperitoneal haematoma and contained rupture. Disadvantages are expense and radiation exposure.
- MRI employs radiofrequency energy and a strong magnetic field to produce images. It is probably better than CT in demonstrating involvement of branch arteries and it does not expose the patient to radiation. MRI angiography uses better signal acquisition and computerized analysis to provide images similar to conventional angiograms. However, it is expensive and the presence of metal in the patient (e.g. metallic surgical clips) precludes its use.
- Because AAAs are often filled with layers of mural thrombus, the lumen through which the blood flows is often much smaller than the true lumen of the aneurysm. Aortography therefore cannot be relied upon to establish the presence or the size of an AAA. However, arteriography is useful for determining the relationship of the renal arteries to the AAA and it may be indicated if a correctable occlusive lesion is suspected, e.g. occlusive iliofemoral disease.

Preoperative assessment. Thorough preoperative evaluation is important prior to elective repair of AAA. High-risk patients are those with cardiac disease, pulmonary disease and renal disease and it is imperative

to detect these patients and optimize the function of these systems prior to operation Coronary artery disease, which may be completely asymptomatic, is prevalent in patients with AAA and most deaths occurring with elective AAA repair are due to ischaemic heart disease. Echocardiography can be used to estimate left ventricular ejection fraction at rest but stress testing (either by radionuclide scanning or dobutamine echocardiography) is probably a better means of preoperative functional cardiac assessment. If a reversible myocardial defect is detected, then coronary angiography and bypass grafting should be undertaken prior to or simultaneously with AAA repair. Similarly, patients with symptomatic carotid artery disease should be treated prior to AAA repair.

Pulmonary complications are common after aortic surgery and preoperative pulmonary function tests (especially FEV1 and vital capacity) should be obtained. Preoperative and postoperative physiotherapy and epidural analgesia help to reduce pulmonary complications. A raised creatinine preoperatively is a risk factor for mortality after aortic surgery. In these patients maintenance of haemodynamic stability and meticulous care with fluid balance are essential. Mannitol may be needed in some patients.

4. Summing-up

5. Literature:

Basic.

- 1 SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
- 2 Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
- 3 Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
- 4 Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
- 5 Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
- 6 RUTHERFORD’S VASCULAR SURGERY AND ENDOVASCULAR THERAPY, 9th ed. Volume 1, Volume 2. Copyright © 2019 by Elsevier, Inc.

Additional:

- 1 Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
- 2 Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaudi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), [& 2 More](#)

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я

4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners-> Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №13

Theme: " Ischemic abdominal syndrome. "

Goal: acquaint with aetiology and pathogenesis of mesenteric ischemia.

-know variants of mesenteric ischemia and developments of haemodynamic infringements.

-know the basic attributes of these diseases.

-know additional methods of diagnostics.

- know opportunities of operative defects correction , indications to them and terms of performance of operation.

Basic concepts: mesenteric ischemia. Classification, presentation. Differential diagnosis.
Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure of the classes.

The main stages of the class, their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical recommendations, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level Solutions to common clinical situation tasks	Tasks Level 2, Level 3 tests, tasks Level 3	
1.Definition concept IAS				
2. Clinical course	level 3			
3. Modern methods of IAS				
Main stage				

To provide curation of patient with IAS	level 3	Practical training	Case patients with IAS	40 min
Master methodological determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical and paraclinical investigations	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and practical skills they	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing				
Homework next session				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of mesenteric ischemia.
- Classification of mesenteric ischemia.
- Clinical manifestations of mesenteric ischemia.
- Additional examination methods for mesenteric ischemia.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

1. A 76-year-old woman is admitted with back pain and hypotension. A CT scan (shown below) is obtained, and the patient is taken to the operating room. Three days after resection of a ruptured abdominal aortic aneurysm, she complains of severe, dull left flank pain and passes bloody mucus per rectum. The diagnosis that must be immediately considered is



- A. Staphylococcal enterocolitis
- B. Diverticulitis
- C. Bleeding AV malformation
- D. Ischemia of the left colon
- E. Bleeding colonic carcinoma

Explanation:

The answer is **d.** (Brewster, Surgery 109:447–457, 1991.) The CT scan reveals a fractured ring of calcification in the abdominal aorta with significant density in the paraaortic area. The inferior mesenteric artery (IMA) is always at risk in patients with the changes in the vessel wall characteristic of abdominal aneurysms, but particularly so in the presence of rupture and retroperitoneal dissection of blood under systemic arterial pressures.

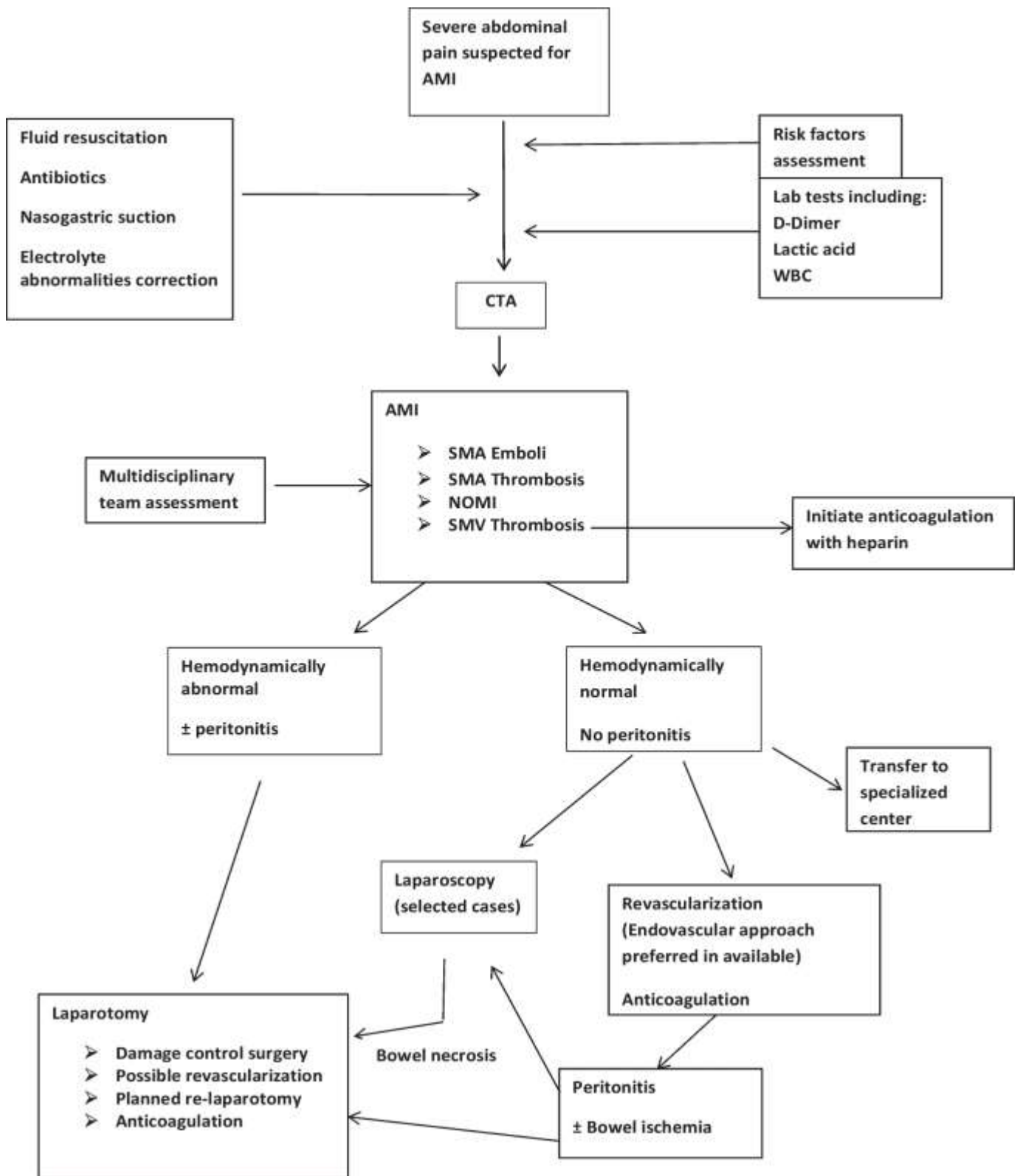
2. A 67-year-old woman with peripheral vascular disease, bilateral leg claudication, and hypertension comes to the clinic because of nausea and severe, diffuse abdominal pain that she rates as 7/10 in intensity for the past 2 days. The pain is related to meals, particularly lunch. She has smoked a pack of cigarettes per day for the past 30 years. The patient has a temperature of 36.1 C/(97 F) with a pulse of 80/min and a blood pressure of 120/80 mm Hg. Abdominal examination demonstrates normal bowel sounds, no tenderness, and no hepatosplenomegaly. Laboratory studies reveal a leukocyte count of 4,000/mm³ and a hematocrit of 47%. You should be immediately suspicious of

- a. acute appendicitis
- b. acute cholecystitis
- c. malingering
- d. mesenteric ischemia
- e. ulcerative colitis

Explanation:

The correct answer is **D.** Mesenteric ischemia, although uncommon, must remain on the differential diagnosis of abdominal pain. The hallmark of mesenteric ischemia is pain out of proportion to physical exam findings. Mesenteric ischemia is especially likely in a patient with known vascular disease and a history of cigarette smoking. The next diagnostic step is a mesenteric angiogram. The superior mesenteric artery is the most often compromised vessel.

Protocol for treatment of mesentery ischemia



4. Summing-up

5. Literature:

Basic.

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Березницький Я. С. (за ред.)General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
6. RUTHERFORD’S VASCULAR SURGERY AND ENDOVASCULAR

Additional:

- 1 Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
- 2 Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaardi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), & 2 More

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners-> Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №14

Theme: " MESENTERIC THROMBOSIS. "

Goal: acquaint with aetiology and pathogenesis of mesenteric thrombosis.

- know variants of mesenteric ischemia and developments of haemodynamic infringements.
- know the basic attributes of these diseases.
- know additional methods of diagnostics.
- know opportunities of operative defects correction , indications to them and terms of performance of operation.

Basic concepts: mesenteric trombosis. Classification, presentation. Differential diagnosis.
Methods of surgical interventions

Equipment - Multimedia;

Plan and organizational structure of the classes.

The main stages of the class, their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical recommendations, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level Solutions to common clinical situation tasks	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept mesenteric trombosis				
2. Clinical course	level 3			
3. Modern methods of mesenteric trombosis				
Main stage				
To provide curation of patient with IAS	level 3	Practical training	Case patients with IAS	40 min
Master methodological determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical and paraclinical investigations	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and practical skills they	level 3	Decision custom tasks	Test case studies of 3	15 min

Summarizing				
Homework next session				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of mesenteric trombosis.
- Classification of mesenteric trombosis.
- Clinical manifestations of mesenteric trombosis.
- Additional examination methods for mesenteric trombosis.
- Conservative treatment
- Sargaical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
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- **clinical situations to test basic knowledge on the topic of the lesson.**

CASE SCENARIOS

1. A 67-year-old woman with peripheral vascular disease, bilateral leg claudication, and hypertension comes to the clinic because of nausea and severe, diffuse abdominal pain that she rates as 7/10 in intensity for the past 2 days. The pain is related to meals, particularly lunch. She has smoked a pack of cigarettes per day for the past 30 years. The patient has a temperature of 36.1 C/(97 F) with a pulse of 80/min and a blood pressure of 120/80 mm Hg. Abdominal examination demonstrates normal bowel sounds, no tenderness, and no hepatosplenomegaly. Laboratory studies reveal a leukocyte count of 4,000/mm³ and a hematocrit of 47%. You should be immediately suspicious of

- A. acute appendicitis
- B. acute cholecystitis
- C. malingering
- D. mesenteric ischemia
- E. ulcerative colitis

Explanation:

The correct answer is **D. Mesenteric ischemia** , although uncommon, must remain on the differential diagnosis of abdominal pain. The hallmark of mesenteric ischemia is pain out of proportion to physical exam findings. Mesenteric ischemia is especially likely in a patient with known vascular disease and a

history of cigarette smoking. The next diagnostic step is a mesenteric angiogram. The superior mesenteric artery is the most often compromised vessel.

Acute appendicitis (choice A) may present with atypical symptoms in the elderly, but is usually present with a fever or elevated white blood cell count. Appendicitis is uncommon in the elderly.

Acute cholecystitis (choice B) should present with right upper quadrant pain and a positive Murphy's sign. Malingering (choice C) should be considered on the differential diagnosis for any patient complaint. It is, however, diagnoses of exclusion that must be entertained only when an extensive diagnostic work up is completed and is not suggestive of a disease process. Ulcerative colitis (choice E) should present with diarrhea, constipation, heme positive stools, and abdominal pain.

2. A 76-year-old woman is admitted with back pain and hypotension. A CT scan (shown below) is obtained, and the patient is taken to the operating room. Three days after resection of a ruptured abdominal aortic aneurysm, she complains of severe, dull left flank pain and passes bloody mucus per rectum. The diagnosis that must be immediately considered is



- A. Staphylococcal enterocolitis
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- E. Bleeding colonic carcinoma

Explanation

The answer is **d**. (Brewster, Surgery 109:447–457, 1991.) The CT scan reveals a fractured ring of calcification in the abdominal aorta with significant density in the paraaortic area. The inferior mesenteric artery (IMA) is always at risk in patients with the changes in the vessel wall characteristic of abdominal aneurysms, but particularly so in the presence of rupture and retroperitoneal dissection of blood under systemic arterial pressures. The incidence of ischemic colitis following abdominal aortic resection is about 2%. Blood flow to the left colon normally derives from the IMA with collateral flow from the middle and inferior hemorrhoidal vessels. The superior mesenteric artery (SMA) may also contribute via the marginal artery of Drummond. If the SMA is stenotic or occluded, flow to the left colon will be primarily dependent on an intact IMA. The IMA is usually ligated at the time of aneurysmorrhaphy. Those patients at highest risk for diminished flow through collateral vessels are those with a history of visceral angina, those found to have a patent IMA at the time of operation, patients who have suffered an episode of hypotension following rupture of an aneurysm, those in whom preoperative angiograms reveal occlusion of the SMA, and those in whom Doppler flow signals along the mesenteric border cease following occlusion of the IMA. Recognition of bowel ischemia at the time of operation should be treated by reimplantation of the IMA into the graft to restore flow.

3. A 67-year-old woman with peripheral vascular disease, bilateral leg claudication, and hypertension comes to the clinic because of nausea and severe, diffuse abdominal pain that she rates as 7/10 in intensity for the past 2 days. The pain is related to meals, particularly lunch. She has smoked a pack of cigarettes per day for the past 30 years. The patient has a temperature of 36.1 C/(97 F) with a pulse of 80/min and a blood pressure of 120/80 mm Hg. Abdominal examination demonstrates normal bowel sounds, no tenderness, and no hepatospleno-megaly. Laboratory studies reveal a leukocyte count of 4,000/mm³ and a hematocrit of 47%. You should be immediately suspicious of

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Malingering (choice C) should be considered on the differential diagnosis for any patient complaint. It is, however, a diagnosis of exclusion that must be entertained only when an

extensive diagnostic work up is completed and is not suggestive of a disease process. Ulcerative colitis (choice E) should present with diarrhea, constipation, heme positive stools, and abdominal pain.

4. A 74 y.o. female patient complains of pain, distended abdomen, nausea. She suffers from heart ischemia, post-infarction and diffuse atherosclerosis. On examination: grave condition, distended abdomen, abdominal wall fails to take active part in breathing. On laparoscopy: some cloudy effusion, one of the bowel loops is dark-blue. What is the most probable diagnosis?

- A. Acute intestinal obstruction
- B. Ischemic abdominal syndrome
- C. Mesenteric vessels thrombosis
- D. Volvulus
- E. Erysipelas

5. Two days after admission to the hospital for a myocardial infarction, a 65-year-old man complains of severe, unremitting midabdominal pain. His cardiac index is 1.6. Physical examination is remarkable for an absence of peritoneal irritation or distention despite the patient's persistent complaint of severe pain. Serum lactate is 9 mmol/L (normal is < 3 mmol/L). Which of the following is the most appropriate next step in this patient's management?

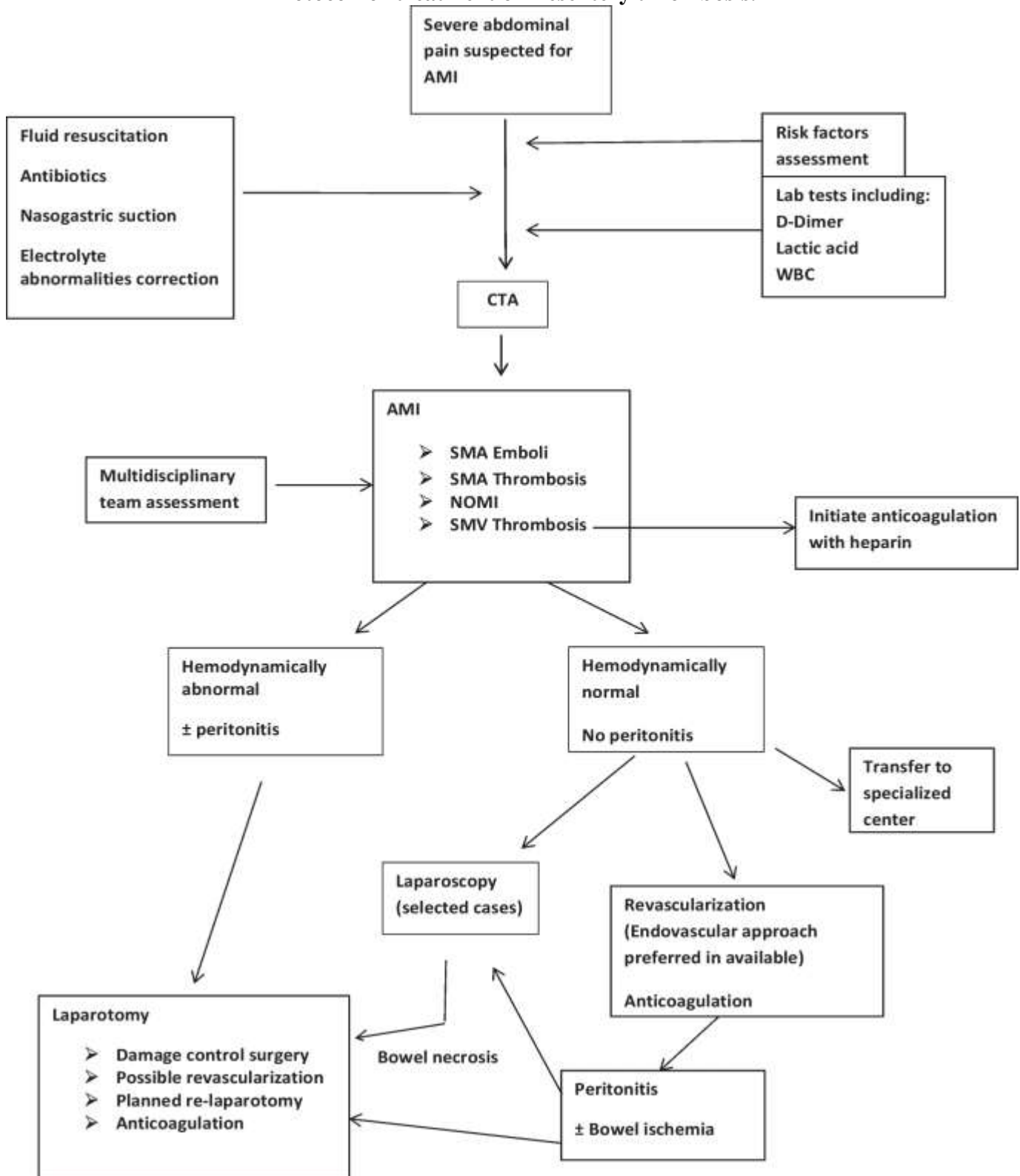
- a. Perform computed tomography.
- b. Perform mesenteric angiography.
- c. Perform laparoscopy.
- d. Perform flexible sigmoidoscopy to assess the distal colon and rectum.
- e. Defer decision to explore the abdomen until the arterial lactate is greater than 10 mmol/L.

Explanation:

The answer is b. (Townsend, pp 1973-1976.) Abdominal pain out of proportion to findings on physical examination is characteristic of intestinal ischemia. The etiology of ischemia may be embolic or thrombotic occlusion of the mesenteric vessels or nonocclusive ischemia due to a low cardiac index or mesenteric vasospasm. Differentiation among these etiologies is best made by mesenteric angiography. While not without serious risks, angiography also offers the possibility of direct infusion of vasodilators into the mesenteric vasculature in the setting of nonocclusive ischemia. This patient, with a recent myocardial infarction and a low cardiac index, is at risk for embolism of clot from a left ventricle mural thrombus as well as low-flow mesenteric ischemia. If embolism or thrombosis is found angiographically (usually involving the superior mesenteric artery), thrombolytic therapy can be attempted in the absence of suspicion of ischemic bowel. Otherwise, operative resection or vascular bypass is indicated to restore flow. If occlusive disease cannot be demonstrated, efforts should be made to simultaneously increase cardiac output with inotropic agents and dilate the mesenteric vascular bed by angiographic instillation of papaverine, nitrates, or calcium-channel blockers. Computed tomography is not helpful in delineating the cause of intestinal ischemia because it does not provide a sufficiently detailed image of the mesenteric vessels. Laparoscopy and/or laparotomy would be useful if ischemic bowel were suspected, although laparoscopy would not allow for adequate assessment of the visceral vessels. Flexible sigmoidoscopy, while useful in patients with ischemic colitis, has no role in the

workup of mesenteric ischemia, which involves primarily the small intestine and right colon. Serum lactate is helpful in raising the suspicion of intestinal ischemia, but no absolute level should be used to decide whether or not to explore a patient.

Protocol for treatment of mesentery thrombosis.



4. Summing-up

5. Recommended reading:

Basic:

- 1 SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
- 2 Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
- 3 Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
- 4 Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
- 5 Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
- 6 RUTHERFORD’S VASCULAR SURGERY AND ENDOVASCULAR
a. THERAPY, 9th ed. Volume 1, Volume 2. Copyright © 2019 by Elsevier, Inc.
- 7 Braunwald’s Heart Disease: A Textbook of Cardiovascular Medicine, 11th Ed. Copyright © 2019 by Elsevier Inc.
- 8 SEIDEL’S GUIDE TO PHYSICAL EXAMINATION: AN INTERPROFESSIONAL APPROACH. Copyright © 2019 by Elsevier, Inc.

Additional:

9. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
10. Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaudi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), [& 2 More](#)

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров’я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров’я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (ГМС)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners-> Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <http://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №15

Theme: " VARICOSE DISEASE OF THE LOWER EXTREMITIES."

2. Goal:

To know:

- I. Concept of «varicose illness».
2. The causes of varicose phlebectasia of extremities. A role of the mechanical factors of blood stagnation, importance of valve failure, a role of hereditary factors, endocrine disorders in varicose disease development.
- f. Classification of varicose illness and its complications.
- g. Clinics and diagnostics of uncomplicated varicose illness.
- h. Complications of varicose phlebectasia of the lower extremities.
- i. Clinics and diagnostics of acute thrombophlebitis of subcutaneous and penetrating veins of the lower extremities.
- j. Indications and methods of surgical treatment of varicose illness.
- k. Methods of conservative therapy of varicose illness and its complications.

Basic concepts: varicose illness . Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure.

The main stages of occupation of their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control%	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical development, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level Solutions to common clinical situation tasks	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept varicose veins				
2. Clinical course	level 3			
3. Modern methods of diagnosis varicose veins				

Main stage

To provide curation of patient varicose veins	level 3	Practical training	Case patients with arterial thrombosis, embolism and occlusive vascular disease	40 min
Master methodological determination specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical and para-clinical investigations	level 3	Practical training	Algorithm physical examination of the patient	

Final Stage

Control and correction of knowledge and practical skills they	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing				
Homework next session				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of varicose illness .
- Classification of varicose illness .
- Clinical manifestations of varicose illness .
- Additional examination methods for varicose illness .
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
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«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

DIRECTIONS: Each item below contains a question or incomplete statement followed by suggested responses. Select the one best response to each question

10. A 78- years -old man suffers from thrombophlebitis of superficial veins of the right thigh. He is ill within 3 days. All this time he has been noting a progressing inflammation from the lower to the upper third of the thigh. On survey a painful cord is being defined on the internal surface of the right thigh; the skin above it is hyperaemic. What kind of operative intervention is indicated for the patient?

Troyanov's operation

Babcock's operation

Muller's operation

Hjusney's operation

Palma's operation

11. Two children's Mother complains of softly-elastic nodes on the external surface of the left thigh with spread to the leg and oedema on the foot at the end of a day. After night sleep oedema disappears. The beginning of illness she links with pregnancy and childbirth. She wears elastic stockings. Establish the initial diagnosis.

Acute thrombophlebitis of deep veins of the left leg

Varicose dilatation of subcutaneous veins of the left leg

Acute thrombophlebitis of superficial veins of the left leg

Endarteritis obliterans of the left lower extremity

Elephantiasis of the left lower extremity

3. A 30- years- old woman is troubled by a strong pain in the left lower extremity, its fast fatigue, in particular in a vertical position. A varicose dilatation of the superficial veins on the left leg appeared about one year ago. On inspection an insufficiency of valves of superficial and perforating veins has been revealed. Your variant of treatment.

Venectomy by Narat

Operation by Troyanov - Trendelenburg.

Venectomy by Babcock.

Operation by Kocket.

All listed methods of treatment.

1. In a 46 years old with varicose illness of the lower extremities profuse bleeding from varicose node in the lower third of the leg in trophic ulcer zone was diagnosed. What kind of first aid is the most correct?

Arterial tourniquet proximally of the ulcer

Tourniquet distally of the ulcer, a bandage

Tourniquet proximally of the ulcer, a bandage

A bandage, manual pressing of varicose node

Elevated position of the extremity, aseptic compression bandage

- 1 In a 42-year-old woman primary varicose dilatation of the right big saphena vein with valve insufficiency was diagnosed. What kind of operation is the most rational?

7. Troyanov – Trendelenburg's, Babcock's, Narat's operation.

8. Troyanov – Trendelenburg's operation

9. Madelung's operation

10. Madelung's, Troyanov – Trendelenburg's operation

11. Linton's, Kocket's, Narat's operation

- 2 A 65-year-old woman is ill with varicose illness of subcutaneous veins of the lower extremities within 25 years. On clinical examination a trophic ulcer covered by fibrin without signs of infection has been revealed on the middle third of the right leg. Which method of treatment is to be applied?

- A. Bandages with Furacilinum solution
 - B. Local application of "Levomicol" ointment
 - C. Saphenoectomy
 - D. Elastic bandaging
 - E. Autodermoplasty
6. A 47-year-old woman complains of heaviness sensation in the lower extremities, fast fatigue in them at standing and walking which disappears in horizontal position. Objectively: dilatation of superficial veins on the left leg and the thigh with pigmentation and skin trophic changes is being defined. What kind of functional test of examination is to be begun in the patient with?
- Troyanov – Trendelenburg's
 - Prat - 2
 - Prat - 1
 - Three-tourniquet test
 - Delbe-Pertes' test
7. In a 60 years old who suffers from varicose veins of the lower extremities a pain and oedema has appeared in the left leg in a day later after insignificant trauma of the leg. The body temperature increased to 37,5°C . Along the big subcutaneous vein on the leg a hyperaemia and a painful cordlike site of induration is being defined. Establish diagnosis.
- Haematoma
 - Acute phlebitis
 - Lymphangitis
 - Acute thrombophlebitis
 - Erysipelas inflammation
8. The Delbe-Pertes' test allows to define:
- Passability of deep veins
 - Impairment of ostial valve function in the big saphena vein
 - Passability of perforating veins
 - Passability of subcutaneous veins
 - A degree of ischemia of examined segment
9. A patient has been admitted to the surgical hospital with the diagnosis of strangulated left-sided femoral hernia. The patient complained of a strong pain under inguinal ligament where a painful induration was being defined. On inspection the varicose veins in the left leg were revealed. There is a thrombophlebitis in the past. What is your diagnosis and tactics of treatment?
- A. Acute thrombosis of varicose node of the big saphena vein. Surgical treatment.
 - B. Acute thrombosis of varicose node of the big saphena vein. Conservative treatment.
 - C. Strangulated femoral hernia. Surgical treatment.
 - D. Inguinal lymphadenitis. Surgical treatment.
 - E. Inguinal lymphadenitis. Conservative treatment.

Skills.

1. Collect anamnesis in the patient with varicose phlebectasia of the lower extremities.
2. Carry out complete clinical research of the patient with varicose illness.
3. Carry out and estimate results of functional tests by Troyanov'-Trendelenburg', Delbe-Pertes, Pratt-I, Pratt-II, Hackenbruch.
4. Interpret the data of tool researches: flebography, Doppler flowmeter, plethysmography etc.
5. Substantiate the clinical diagnosis with definition of the stage of varicose illness
6. and developed complications.
7. Determine tactics of treatment of the patient with uncomplicated varicose illness.
8. Determine the indication for operation.
9. Estimate a coagulogram, know principles of anticoagulant therapy in trombophlebitis of superficial and penetrating veins of the lower extremity.

4.Summing-up

5.Literature:

Basic:

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
6. RUTHERFORD'S VASCULAR SURGERY AND ENDOVASCULAR THERAPY, 9th ed. Volume 1, Volume 2. Copyright © 2019 by Elsevier, Inc.

Additional:

- 1.Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
- 2.Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaudi](#) (Author), [Dana](#)
- 3.[Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), [& 2 More](#)

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я

4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners/>- Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №16

Theme: " Deep vein thrombosis."

Goal:

To know:

1. Concept of “venous thromboses”.
3. The reasons, which cause vein thromboses of extremities. A role of the mechanical factors of blood stagnation, importance of valve failure, role of hereditary factors, endocrine disorders in development of the disease.
4. Classification of venous thrombosis and its complications.
5. Clinics and diagnostics of the uncomplicated venous thromboses.
6. Complications of varicose phlebectasia of the lower extremities.
7. Clinics and diagnostics of deep venous thrombosis of the lower extremities,
8. Indications and methods of surgical treatment of deep venous thrombosis.
9. Methods of conservative therapy of deep venous thrombosis and its complications.

Basic concepts: vein thromboses. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure.

The main stages of occupation of their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control%	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical development, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min

Control of initial level of knowledge	level 2	Test control 2i3 level Solutions to common and Neti-povyh clinical situation tasks	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept DVT				
2. Definition clinical course	level 3			
3. Modern methods of diagnosis DVT				
4. Methods of surgical treatment	level 3			
Main stage				
To provide curation of patient deep vein thrombosis	level 3	Practical training	Case patients with arterial thrombosis, embolism and occlusive vascular disease	40 min
Master methodological determination of specific symptoms	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and practical skills they	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing Homework next session				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).
2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of deep vein thrombosis and embolism.
- Classification of deep vein thrombosis and embolism.
- Clinical manifestations of deep vein thrombosis and embolism.
- Additional examination methods for deep vein thrombosis and embolism.
- Conservative treatment
- Surgical treatment.

3.requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

DIRECTIONS: Each item below contains a question or incomplete statement followed by suggested responses. Select the one best response to each question

1. Patients with phlebographically confirmed deep vein thrombosis of the calf
- Can expect asymptomatic recovery if treated promptly with anticoagulants
 - May be effectively treated with lowdose heparin
 - May be effectively treated with pneumatic compression stockings
 - May be effectively treated with acetylsalicylic acid
 - Are at risk for significant pulmonary embolism

The answer is **E**. Low-dose heparin and pneumatic compression stockings have been shown to be effective prophylaxis against deep vein thrombosis; however, they are not effective against established thrombosis, the treatment for which is therapeutic heparinization. Salicylate has not been convincingly shown to have either a prophylactic or therapeutic role in the treatment of deep vein thrombosis.

Even following prompt, aggressive treatment of deep vein thrombosis of the calf, as many as half of affected patients will develop symptoms of chronic venous hypertension, and a larger number will have abnormal venous hemodynamic findings. Untreated vein thrombosis of the calf may propagate into the larger popliteal veins and cause life-threatening pulmonary embolism.

2. Which actions for prevention thromboembolism of pulmonary artery are to be carried out in a 34-year-old woman with acute thrombosis of the right ileac segment?

- A. To ligation of the ileac vein.
- B. Temporary cava-filter installation.
- C. Indirect anticoagulants administration.
- E. Implantation of the constant cava-filter.
- E. Administration of the direct anticoagulants

3. A 53-year-old man has been admitted to the hospital with complaints of a strong pain in the right leg. It takes place oedema in the foot and leg; convulsive spasm of the calf muscles; increase of body temperature to 38,5 C. She is ill for 3 days. On survey the right leg and foot with skin hyperaemia, is intense and glazed. A circle of the right leg is 5 cm more than left one. Movements are possible, but they are very painful. On palpation tenderness of the extremities along vascular bundle, in particular in the popliteal fossa is being defined. Pulsation on foot arteries is satisfactory. Establish initial diagnosis.

Varicose expansion of superficial veins in the leg.
Acute thrombosis of the big subcutaneous vein in the thigh
Acute thrombosis in the popliteal vein.
Lerish's syndrome, IIIrd stage.
Paget-Shretter's syndrome.

4. A 36-year-old man marks moderate pains and small oedema in the right leg within 3 days. Pains and oedema all over the right leg and foot with expressed cyanosis have suddenly appeared in the upper third of the thigh five hours ago. Objectively: on palpation a sharp tenderness in the upper third of the thigh and infiltration along vascular bundle is being revealed. Establish initial diagnosis.

Acute thrombophlebitis of deep veins of the right leg
B Acute thrombophlebitis in the right femoral vein
Acute thrombosis of the femoral artery on the right
Thromboembolism in the right femoral artery

5. In a patient acute thrombosis in the left ileac vein has developed on the 7th day after operation due to malignant tumour of sigmoid colon. 2 hours has passed after onset of thrombosis. Where and how the patient is to be treated?

In the vascular surgery department, operation – thromboectomy
B. Bed regime, anticoagulant therapy
A In the vascular surgery department, shunting
B Physiotherapy, anticoagulative therapy in the same department
C To leave in the same department, spasmolytics, anticoagulants

6. A patient who suffers from heart disease and ciliary arrhythmia a sharp pain in the left leg and foot has suddenly appeared. The foot and the lower third of the leg are pale and cold. Palpation of the leg is painful; tactile sensitivity is reduced; movements are limited; pulsation on the foot arteries is not being defined. Establish initial diagnosis.

Acute thrombophlebitis
Thrombosis of the femoral artery
Acute phlebitis
Erysipelatous inflammation
Gangrene

Skills

1. Collect anamnesis in the patient with deep venous thrombosis of extremities.
2. Carry out complete clinical research of the patients with deep venous thrombosis.
3. Carry out and estimate results of functional tests by Troyanov-Trendelenburg, Delbe- Pertes, Pratt-I, Pratt-II, Hackenbruch.
4. Interpret the data of tool researches: flebography, Doppler, plethysmography etc. /
5. Substantiate the clinical diagnosis with definition of the stage of deep vein thrombosis
6. Determine tactics of treatment of the patient with uncomplicated deep vein thrombosis
7. Determine the indication for operation. Estimate a coagulogram, know principles of antycoagulant therapy of deep vein thrombosis.

4. Summing-up

5. Literature:

Basic:

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
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5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
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11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №17-18

Theme: " POST-THROMBOTIC SYNDROME."

2. Goal:

To know:

- I. Concept of «Post-thrombotic syndrome».

2. The causes of Post-thrombotic syndrome of the lower extremities. A role of mechanical factors of blood stagnation, importance of valve failure, role of the hereditary factors, endocrine disorders in development of Post-thrombotic syndrome.
3. Classification of Post-thrombotic syndrome and its complications.
4. Clinics and diagnostics of the Post-thrombotic syndrome.
5. Complications of Post-thrombotic syndrome of the lower extremities.
6. Indications and methods of surgical treatment of Post-thrombotic syndrome.
7. Methods of conservative therapy of Post-thrombotic syndrome and its complications.

Basic concepts: Post-thrombotic syndrome. Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure.

The main stages of occupation of their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control%	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical development, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level Solutions to common clinical situation tasks	Tasks Level 2, Level 3 tests, tasks Level 3	
1. Definition concept Post-thrombotic syndrome				
2. Definition clinical course	level 3			
3. Modern methods of diagnosis of Post-thrombotic syndrome				
4. Methods of surgical treatment	level 3			
Main stage				

To provide curation of patient with Post-thrombotic syndrome	level 3	Practical training	Case patients with ALI	40 min
Master methodological determination	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical examination	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and practical skills	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing lessons				
Homework				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of Post-thrombotic syndrome.
- Classification of Post-thrombotic syndrome.
- Clinical manifestations of Post-thrombotic syndrome.
- Additional examination methods for Post-thrombotic syndrome.
- Conservative treatment
- Surgical treatment.

3. requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

1. The most typical attributes of heavier ischemia of an extremity is:
 - A. Muscular and arthral contracture
 - B. Subcutaneous haemorrhages
 - C. Decrease of intensity of pain syndrome
 - D. Increase of intensity of pain syndrome
 - E. Disappearance of deep muscular sensitivity

- 2.. A 28-year-old man complains of nodulose dilatation of the subcutaneous veins on the back surface of the right foot, on the anterior-internal surface of the right leg and thigh, heaviness in the right leg at the end of a day, cramps in the calf muscles at night. Objectively: frank dilatation of the subcutaneous veins in vertical position which empty in horizontal position and completely empty in elevated position of the right limb is being noted. Establish initial diagnosis.
 - A. Parks-Weber's syndrome
 - B. Varicose illness, chronic venous failure in the stage of subcompensation
 - C. Klippel-Trenone's syndrome
 - D. Acute thrombophlebitis
 - E. Post-thrombotic syndrome

3. A 62-year-old man complains of severe pains, a feeling of numbness and cold in the left lower extremity appeared suddenly three hours ago. Within one year he has been marking a hypersensibility to cooling and pains in this extremity during walking. Left foot and leg have got a marble discoloration, the subcutaneous veins are emptied. The foot is cold, active movements in the foot and toes are in full amplitude. Pulse is only being palpated on the femoral artery. Above it a rough systolic bruit is being listened. Establish the initial diagnosis.
 - A. Acute ileofemoral arterial thrombosis
 - B. Endarteritis obliterans.
 - C. Stenosis of the left popliteal artery.
 - D. Acute thrombophlebitis
 - E. Arteriitis of the left femoral artery

4. A 53-year-old woman has been admitted to the surgical department with complaints to oedema of the left lower extremity which has appeared 2 weeks ago after physical exertion. From the anamnesis: she has been suffering from varicose phlebectasia of the lower extremities for 20 years. On survey the left lower extremity is oedematous: the thigh is thickened to 10 cm, the leg is done to 7cm; active movements and sensitivity are saved. Doppler ultrasound reveals thrombosis in the common femoral vein with the phenomena of flotation. What kind of medical tactics is the most expedient?
 - A. Endovascular cava-filter implantation
 - B. Urgent thrombectomy
 - C. Conservative treatment
 - D. Elective thrombectomy
 - E. Palma's operation

5. A patient complains of oedema of the right foot and leg. The disease began from sudden pains and oedema in the leg 1,5 month ago. The cause of his applying to the doctor was varicose veins and pigmentation on the internal surface of the leg. Establish the initial diagnosis.
 - A. Ilefemoral phlebothrombosis
 - B. Acute thrombophlebitis of the superficial veins
 - C. Post-thrombotic syndrome of the right leg
 - D. Varicose illness of the right lower extremity.
 - E. Arteriovenous dysplasia.

6. A 36-year-old woman complains of a pain in the left leg, its enlargement in size, more in evenings. She underwent deep vein thrombosis of this extremity 5 years ago. On inspection: the extremity is enlarged; a brown pigmentation is being noted. There is a trophic ulcer 2 cm in diameter on the internal surface of the leg. Your variant of operative treatment.
 - A. Venectomy by Narat
 - B. Palma's operation.
 - C. Ligation of the superficial veins by Shede-Kocher.
 - D. Linton's operation.
 - E. Venectomy by Madelung.

7. A 35-year-old man suffers from post-thrombotic syndrome of the left lower extremity. There is varicose dilatation of subcutaneous veins in the left leg and in the thigh. The extremity is painful and oedematous. Phlebography reveals occlusion in the femoral vein. Management.
 - A. Conservative treatment
 - B. Linton's operation.
 - C. Ligation of the superficial veins by Shede-Kocher.
 - D. Hjusney's operation.
 - E. Venectomy by Madelung.

8. A 47-year-old woman underwent acute deep vein thrombosis in the ileac segment on the right 3 years ago. Sometimes a pain, heaviness, frank oedema in the right lower extremity troubles her. Inspection reveals frank oedema on the thigh and on the leg, brown pigmentation and induration of skin on the lower third of the leg and varicose dilated superficial veins on the leg. Your variant of surgery.
 - A. Palma's operation.
 - B. Linton's operation
 - C. Ligation of the superficial veins by Shede-Kocher.
 - D. Venectomy by Narat.
 - E. Venectomy by Madelung.

9. A 30-year-old woman is troubled by strong pains in the left lower extremity and its fast fatigability, in particular in vertical position. About one year ago varicose dilatation of the superficial veins of the left leg, which shortly began to accompany by mentioned signs, has appeared. Inspection reveals failure of valves of the superficial and perforating veins. Your variant of treatment.
 - A. Venectomy by Narat
 - B. Operation by Troyanov - Trendelenburg.
 - C. Venectomy by Babcock.
 - D. Operation by Kokett.
 - E. All listed methods of treatment.

10. In a 64-year-old man carcinoma of the stomach has been diagnosed. She is being prepared for radical operation. It takes place post-thrombotic syndrome, oedematous-pain form as accompanying pathology; there was thromboembolism of pulmonary artery 3 years ago in the past. Indicate the most effective method of prophylaxis of recurrent thromboembolism of pulmonary artery after radical operation on the stomach.
 - A. Application elastic bandaging on extremities in the postoperative period
 - B. Heparin therapy in the postoperative period
 - C. Applying Unn's zincum-gelatinous bandage in the preoperative period
 - D. Administration the indirect anticoagulants in the pre-and postoperative period
 - E. Implantation of the cava-filter in the preoperative period

Skills:

1. Collect anamnesis in the patient with a Post-thrombotic syndrome. .
2. Carry out complete clinical research of the patient with Post-thrombotic syndrome.
3. Estimate results of functional tests by Troyanov'-Trendelenburg',

Delbe-Pertes', Pratt'-I, Pratt'-II, Hackenbruch'.

4. Interpret the data of tool researches: flebography, Doppler flowmeter, plethysmography etc.
5. Substantiate the clinical diagnosis with stage definition of Post-thrombotic syndrome
6. Determine tactics of treatment in the patient with Post-thrombotic syndrome
7. Substantiate the indication for operation..
8. Estimate a coagulogram, know the principles of anticoagulant therapy in Post-thrombotic syndrome.

4. Summing-up

5. Recommended Literature:

Basic:

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
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4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners/>- Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. [https://youcontrol.com.ua/](http://youcontrol.com.ua/) - Асоціація судинних хірургів України

Practical class №19

Theme: " DISEASES OF LYMPHATIC VESSELS."

2. Goal:

TO KNOW

1. Anatomical features of lymphatic vessels of the lower extremities.
2. Aetiology and pathogenesis of elephantiasis.
3. Clinics and diagnostics of chronic lymphostasis.
4. Principles of conservative treatment of elephantiasis.
5. Variants of surgical treatment of chronic lymphostasis.

Basic concepts: elephantiasis, chronic lymphostasis . Classification, presentation. Differential diagnosis. Methods of surgical interventions.

Equipment - Multimedia;

Plan and organizational structure.

The main stages of occupation of their function and meaning	Learning Objectives assimilation rate	Means of instruction and control	Materials regarding the methodology of the educational control%	Duration in minutes
Preparatory stage				
Organization of classes	level 2		Methodical development, table slides	3 min
Reference target task		Individual survey The decision of typical problems 2,	videos, 2 level tasks	20 min
Control of initial level of knowledge	level 2	Test control 2i3 level Solutions to common clinical situation tasks	Tasks Level 2, Level 3 tests, tasks Level 3	
1.Definition concept of lymphedema				
2.Definition clinical course	level 3			
3. Modern methods of diagnosis of lymphedema				
4. Methods of surgical treatment	level 3			
Main stage				

To provide curation of patient with lymphedema	level 3	Practical training	Case patients with ALI	40 min
Master methodological determination	level 3	Practical training	Algorithm for the symptoms	40 min
Master the methods of clinical examination	level 3	Practical training	Algorithm physical examination of the patient	
Final Stage				
Control and correction of knowledge and practical skills	level 3	Decision custom tasks	Test case studies of 3	15 min
Summarizing lessons				
Homework				2 min

1. Organizational activities (greeting, checking those present, reporting the topic, objectives of the lesson, motivation of applicants for higher education to study the topic).

2. Control of the reference level of knowledge frontal survey:

Questions:

- Etiology, pathogenesis of lymphedema.
- Classification of arterial lymphedema.
- Clinical manifestations of lymphedema.
- Additional examination methods for lymphedema.
- Conservative treatment
- Surgical treatment.

3 requirements for the theoretical readiness of students to perform practical classes (requirements for knowledge);

Criteria of ongoing assessment at the practical class

Score	Assessment criterion
«5»	The applicant is fluent in the material, actively participates in the discussion and solution of a situational Clinical problem, confidently demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«4»	The applicant has a good command of the material, participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies with some errors, expresses his opinion on the topic of the lesson, and demonstrates Clinical thinking.
«3»	The applicant does not have enough knowledge of the material, hesitantly participates in the discussion and solution of a situational Clinical problem, demonstrates practical skills when examining a sick child and interpreting Clinical , laboratory and instrumental data with significant errors.
«2»	The applicant does not own the material, does not participate in the discussion and solution of a situational Clinical problem, does not demonstrate practical skills when examining a sick child and interpreting data from Clinical , laboratory and instrumental studies.

- clinical situations to test basic knowledge on the topic of the lesson.

CASE SCENARIOS

DIRECTIONS: Each item below contains a question or incomplete statement followed by suggested responses. Select the one best response to each question

1. A two children's Mother complains of softly - elastic nodes on the external surface of the left thigh with transition to the leg and oedema on the foot at the end of a day. After night rest oedema disappears. The onset of illness she links with pregnancy and childbirth. She wears elastic stockings. Establish the initial diagnosis.
 - A. Varicose dilatation of subcutaneous veins in the left leg
 - B. Acute thrombophlebitis of deep veins in the left leg
 - C. Acute thrombophlebitis of superficial veins in the left leg
 - D. Endarteritis obliterans of the left lower limb
 - E. Elephantiasis of the left lower limb

2. A 35-year-old woman complains of oedema in the base of toes and in the dorsum of the left foot .She does not mark any pain. Oedema disappears after night sleep. Superficial veins are not dilated. Establish initial diagnosis.
 - A. Thrombophlebitis of deep veins
 - B. Lymphostasis, the 2nd stage
 - C. Thrombophlebitis of superficial veins
 - D. Lymphostasis, the 1st stage
 - E. Post-thrombotic syndrome

3. A 28- year-old woman complains of oedema in the right ankle joint area. Oedema is soft, painless and disappears after bed rest; on the skin above oedematous tissues it is easy to form a skin fold. Establish initial diagnosis.
 - A. Thrombophlebitis
 - B. Lymphostasis
 - C. Post-thrombotic syndrome
 - D. Acute thrombosis
 - E. Arterial embolism

4. A 50-year-old woman complains of oedema in the right lower extremity which does not disappear in prolonged horizontal position. Palpation of the extremities is painless. Subcutaneous veins are not dilated. The skin is dense; a fold is not being formed. Establish initial diagnosis.
 - A. Arterial embolism
 - B. Lymphostasis
 - C. Thrombophlebitis
 - D. Acute thrombosis
 - E. Post-thrombotic syndrome

5. A 53- year-old woman complains of oedema of both lower extremities not disappearing after night sleep. She is ill within 6 years. On objective inspection the lower extremities are thickened; hyperkeratosis and hyperpigmentation of the skin are being defined. Palpation of the extremities is painless. Establish initial diagnosis.
 - A. Post-thrombotic syndrome
 - B. Arterial embolism
 - C. Thrombophlebitis
 - D. Acute thrombosis
 - E. Lymphostasis

6. A 48-year-old woman has seen to the doctor with complaints to oedema on the right lower extremity which has increased after prolong standing and heaviness feeling in the affected extremity. She is ill for 7 years. On survey a hyperpigmentation of the skin with warty growths pays attention to itself. Subcutaneous veins are not being defined. Establish initial diagnosis.

- A. Lymphostasis, the 1st stage
- B. Lymphostasis, the 2nd stage
- C. Thrombophlebitis of superficial veins
- D. Thrombophlebitis of deep veins
- E. Post-thrombotic syndrome

7. A 43-year-old woman complains of oedema of both lower extremities. Oedema is dense, is not disappearing after night sleep. She is ill for 10 years. On survey the cracks and ulcerations on legs are being defined from which whitish fluid without smell in a small amount is being discharged. The expressed hyperpigmentation of the skin of both extremities is being marked. Establish initial diagnosis.

- A. Thrombophlebitis
- B. Arterial embolism
- C. Lymphostasis
- D. Acute thrombosis
- E. Post-thrombotic syndrome

8. In a 27-year-old woman the diagnosis of lymphostasis of the left lower extremity of the 1st stage was established. On inspection an authentic organic changes in the lower extremities are not being revealed. What kind of treatment is indicated to the given patient?

- A. Radiation therapy
- B. Surgical
- C. Treatment is not indicated
- D. Conservative
- E. Prophylactic measures

9. A 25-year-old woman presents to the emergency room complaining of redness and pain in her right foot up to the level of the midcalf. She reports that her right lower extremity has been swollen for at least 15 years, but her left leg has been normal. On physical examination, she has a temperature of 39°C (102.2°F) and the right lower extremity is nontender with nonpitting edema from the groin down to the foot. There is cellulitis of the right foot without ulcers or skin discoloration. The left leg is normal. Which of the following is the most likely underlying problem?

- a. Congenital lymphedema
- b. Lymphedema praecox
- c. Venous insufficiency
- d. Deep venous thrombosis
- e. Acute arterial insufficiency

Explanation

The answer is **B**. (Townsend, pp 2022-2023.) This patient's underlying problem is unilateral primary lymphedema. Lymphedema is classified as primary when the etiology is unknown. Hypoplasia of the lymphatic system of the lower extremity accounts for more than 90% of cases of primary lymphedema. If edema is present at birth, it is referred to as congenital; if it starts early in life (as in this woman), it is called praecox; if it appears after the age of 35 years, it is tarda. The inadequacy of the lymphatic system accounts for the repeated episodes of cellulitis that these patients experience. Swelling is not seen with acute arterial insufficiency. Deep venous thrombophlebitis will result in tenderness and is generally not a predisposing factor for cellulitis of the foot. Venous insufficiency is usually accompanied by varicose veins, brawny skin discoloration in the distal leg and ankle, and skin ulcers.

10. A 25-year-old woman presents to the emergency room complaining of redness and pain in her right foot up to the level of the midcalf. She reports that her right leg has been swollen for at least 15 years, but her left leg has been normal. On physical examination she has a temperature of 39°C (102.2°F). The left leg is normal. The right leg is not tender, but it is swollen from the inguinal ligament down and there is an obvious cellulites of the right foot. The patient's underlying problem is

- F. Popliteal entrapment syndrome
- G. Acute arterial insufficiency
- H. Primary lymphedema
- I. Deep venous thrombosis
- J. None of the above

Explanation

The answer is C. This patient is at high risk for developing cellulitis of her right foot because her underlying problem is unilateral primary lymphedema. Hypoplasia of the lymphatic system of the lower extremity accounts for greater than 90% of patients with primary lymphedema. If edema is present at birth it is referred to as congenital; if it starts early in life (as in this woman) it is called praecox; and if it appears after age 35 it is tarda. The inadequacy of the lymphatic system accounts for the repeated episodes of cellulitis that these patients experience. Swelling is not seen with acute arterial insufficiency or with popliteal entrapment syndrome. Deep venous thrombophlebitis will result in tenderness and is generally not a predisposing factor for cellulitis of the foot.

4. Summing-up

5. Recommended reading

Basic:

- 1 SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
- 2 Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
- 3 Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
- 4 Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
- 5 Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
- 6 JANE C. ROTHROCK// Alexander's Care of the Patient in Surgery. 16th Ed. 2019
- 7 RUTHERFORD'S VASCULAR SURGERY AND ENDOVASCULAR THERAPY, 9th ed. Volume 1, Volume 2. Copyright © 2019 by Elsevier, Inc.
- 8 Byung-Boong Lee, Stanley G. Rockson, John Bergan//Lymphedema. 2nd Ed. 2018.

Additional:

9. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016

10. Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaudi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), & 2 More

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України
5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaeztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners-> Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <http://youcontrol.com.ua/> - Асоціація судинних хірургів України

Practical class №20

Theme: " Patient examination & Case history."

2. Goal:

TO KNOW

- Patient's complaints at admission and during his examination
- Anamnesis/past history/
- Aetiology of illness
- Risk factors.
- Classification: a) by localization, b) by degree of severity, c) by complications
- Early clinical signs of the disease.
- Clinical signs in advanced cases.
- Contemporary methods of diagnostics.
- Indication for surgical treatment.
- Contraindication for surgical treatment.
- Methods of complex treatment.
- The atypical forms of the disease.

CONTENTS of the THEME :

Surgical Case History and Physical Examination

Identifying Data: Patient's name, age, race, sex; referring physician.

Chief Compliant: Reason given by patient for seeking surgical care and the duration of the symptom.

History of Present Illness (HPI): Describe the course of the patient's illness, including when it began, character of the symptoms; pain onset (gradual or rapid), precise character of pain (constant, intermittent, cramping, stabbing, radiating); other factors associated with pain (defecation, urination, eating, strenuous activities); location where the symptoms began; aggravating or relieving factors. Vomiting (color, character, blood, coffee-ground emesis, frequency, associated pain). Change in bowel habits; rectal bleeding, character of blood (clots, bright or dark red), trauma; recent weight loss or anorexia; other related diseases; past diagnostic testing.

Past Medical History (PMH): Previous operations and indications; dates and types of procedures; serious injuries, hospitalizations; diabetes, hypertension, peptic ulcer disease, asthma, heart disease; hernia, gallstones.

Medications: Aspirin, anticoagulants, hypertensive and cardiac medications, diuretics.

Allergies: Penicillin, codeine, iodine.

Family History: Medical problems in relatives. Family history of colon cancer, cardiovascular disease.

Social History: Alcohol, smoking, drug usage, occupation, daily activity.

Review of Systems (ROS):

General: Weight gain or loss; loss of appetite, fever, fatigue, night sweats. Activity level.

HEENT: Headaches, seizures, sore throat, masses, dentures.

Respiratory: Cough, sputum, hemoptysis, dyspnea on exertion, ability to walk up flight of stairs.

Cardiovascular: Chest pain, orthopnea, claudication, extremity edema.

Gastrointestinal: Dysphagia, vomiting, abdominal pain, hematemesis, melena (black tarry stools), hematochezia (bright red blood per rectum), constipation, change in bowel habits; hernia, hemorrhoids, gallstones.

Genitourinary: Dysuria, hesitancy, hematuria, discharge; impotence, prostate problems, urinary frequency.

Gynecological: Last menstrual period, gravida, para, abortions, length of regular cycle and periods, birth control.

Skin: Easy bruising, bleeding tendencies.

Neurological: Stroke, transient ischemic attacks, weakness.

Surgical Physical Examination

General appearance: Note whether the patient looks “ill,” well, or malnourished.

Vital Signs: Temperature, respirations, heart rate, blood pressure, weight.

Eyes: Pupils equally round and react to light (PERLL); extraocular movements intact (EOMI).

Neck: Jugular venous distention (JVD), thyromegaly, masses, bruits; lymphadenopathy; trachea midline.

6 Preoperative Preparation of the Surgical Patient

Chest: Equal expansion, dullness to percussion; rales, rhonchi, breath sounds.

Heart: Regular rate and rhythm (RRR), first and second heart sounds; murmurs (grade 1-6), pulses (graded 0-2+).

Breast: Skin retractions, erythema, tenderness, masses (mobile, fixed), nipple discharge, axillary or supraclavicular node enlargement.

Abdomen: Contour (flat, scaphoid, obese, distended), scars, bowel sounds, bruits, tenderness, masses, liver span; splenomegaly, guarding, rebound, percussion note (dull, tympanic), pulsatile masses, costovertebral angle tenderness (CVAT), abdominal hernias.

Genitourinary: Inguinal hernias, testicles, varicoceles; urethral discharge, varicocele.

Extremities: Skin condition, edema (grade 1-4+); cyanosis, clubbing, pulses (radial, ulnar, femoral, popliteal, posterior tibial, dorsalis pedis; simultaneous palpation of radial and femoral pulses). Grading of pulses: 0 = absent; 1+ weak; 2+ normal; 3+ very strong (arterial dilation).

Rectal Exam: Masses, tenderness, hemorrhoids, prostate masses; bimanual palpation, guaiac test for occult blood.

Neurological: Mental status, cranial nerves, gait, strength (graded 0-5); tendon reflexes, sensory testing.

Laboratory Evaluation: Electrolytes (sodium, potassium, bicarbonate, chloride, BUN, creatinine), glucose, liver function tests, INR/PTT, CBC with differential;

X-rays, ECG (if older than 35 yrs or cardiovascular disease), urine analysis.

Assessment (Impression): Assign a number to each problem and discuss each problem. Begin with most important problem and rank in order.

Plan: Discuss surgical plans for each numbered problem, including preoperative testing, laboratory studies, medications, antibiotics, endoscopy.

Preoperative Preparation of the Surgical Patient

1. Review the patient’s history and physical examination, and write a preoperative note assessing the patient’s overall condition and operative risk.

2. **Preoperative laboratory evaluation:** Electrolytes, BUN, creatinine, INR/PTT, CBC, platelet count, UA, ABG, pulmonary function test. Chest x-ray (>35 yrs old), EKG (if older than 35 yrs old or if cardiovascular disease). Type and cross for an appropriate number of units of blood. No screening laboratory tests are required in the healthy patient.

3. Skin preparation: Patient to shower and scrub the operative site with germicidal soap (Hibiclens) on the night before surgery. On the day of surgery, hair should be removed with an electric clipper or shaved just prior to operation.

4. Prophylactic antibiotics or endocarditis prophylaxis if indicated.

5. Preoperative incentive spirometry on the evening prior to surgery may be indicated for patients with pulmonary disease.

6. Thromboembolic prophylaxis should be provided for selected, high-risk patients.

7. Diet: NPO after midnight.

8. IV and monitoring lines: At least one 18-gauge IV for initiation of anesthesia. Arterial catheter and pulmonary artery catheters (Swan-Ganz) if indicated. Patient to void on call to operating room.

9. Medications. Preoperative sedation as ordered by anesthesiologist.

Maintenance medications to be given the morning of surgery with a sip of water. Diabetics should receive one half of their usual AM insulin dose, and an insulin drip should be initiated with hourly glucose monitoring.

10. Bowel preparation

Bowel preparation is required for upper or lower GI tract procedures.

Antibiotic Preparation for Colonic Surgery

Mechanical Prep: Day 1: Clear liquid diet, laxative (milk of magnesia 30 cc or magnesium citrate 250 cc), tap water or Fleet enemas until clear. Day 2: Clear liquid diet, NPO, laxative. Day 3: Operation.

Whole Gut Lavage: Polyethylene glycol electrolyte solution (GoLytely).

Day 1: 2 liters PO or per nasogastric tube over 5 hours. Clear liquid diet.

Day 2: Operation.

Oral Antibiotic Prep: One day prior to surgery, after mechanical or whole gut lavage, give neomycin 1 gm and erythromycin 250 mg at 1 p.m., 2 p.m., 11 p.m.

11. Preoperative IV antibiotics: Initiate preoperatively and give one dose during operation and one dose of antibiotic postoperatively. Cefotetan (Cefotan), 1 gm IV q12h, for bowel flora, or cefazolin (Ancef), 1 gm IVPB q8h x 3 doses, for clean procedures.

12. Anticoagulants: Discontinue Coumadin 5 days preop and check PT; stop IV heparin 6 hours prior to surgery.

Admitting and Preoperative Orders

Admit to: Ward, ICU, or preoperative room.

Diagnosis: Intended operation and indication.

Condition: Stable

Vital Signs: Frequency of vital signs; input and output recording; neurological or vascular checks. Notify physician if blood pressure <90/60, >160/110; pulse >110; pulse <60; temperature >101.5; urine output <35 cc/h for >2 hours; respiratory rate >30.

Activity: Bed rest or ambulation; bathroom privileges.

Allergies: No known allergies

Diet: NPO

IV Orders: D5 ½ NS at 100 cc/hour.

Oxygen: 6 L/min by nasal canula.

Drains: Foley catheter to closed drainage. Nasogastric tube at low intermittent suction. Other drains, tubes, dressing changes. Orders for irrigation of tubes.

Medications: Antibiotics to be initiated immediately preoperatively; additional dose during operation and 1 dose of antibiotic postoperatively. Cefotetan (Cefotan), 1 gm IV q12h, for bowel flora, or cefazolin (Ancef) 1 gm IVPB q8h x 3 doses; for clean procedures.

Labs and Special X-Rays: Electrolytes, BUN, creatinine, INR/PTT, CBC, platelet count, UA, ABG, pulmonary function tests. Chest x-ray (if >35 yrs old), EKG (if older than 35 yrs old or if cardiovascular disease). Type and cross for an appropriate number of units of blood.

8 Preoperative Note Preoperative Note Preoperative Diagnosis:

Procedure Planned:

Type of Anesthesia Planned:

Laboratory Data: Electrolytes, BUN, creatinine, CBC, INR/PTT, UA, EKG, chest x-ray; type and screen for blood or cross match if indicated; liver function tests, ABG.

Risk Factors: Cardiovascular, pulmonary, hepatic, renal, coagulopathic, nutritional risk factors.

American Surgical Association (ASA) grading of surgical risk: 1= normal;

2= mild systemic disease; 3= severe systemic disease; 4= disease with major threat to life; 5= not expected to survive.

Consent: Document explanation to patient of risks and benefits of the procedure and alternative treatments. Document patient's or guardian's informed consent and understanding of the procedure. Obtain signed consent form.

Allergies:

Major Medical Problems:

Medications:

Special Requirements: Signed blood transfusion consent form; documentation that breast procedure patients have been given an information brochure.

Brief Operative Note

This note should be written in chart immediately after the surgical procedure.

Date of the Procedure:

Preoperative Diagnosis:

Postoperative Diagnosis:

Procedure:

Operative Findings:

Names of Surgeon and Assistants:

Anesthesia: General endotracheal, spinal, epidural, regional or local.

Estimated Blood Loss (EBL):

Fluids and Blood Products Administered During Procedure:

Urine output:

Specimens: Pathology specimens, cultures, blood samples.

Intraoperative X-rays:

Drains:

Condition of Patient: Stable

Operative Report

This full report should be dictated at the conclusion of the surgical procedure.

Identifying Data: Name of patient, medical record number; name of dictating physician, date of dictation.

Attending Surgeon and Service:

Date of Procedure:

Preoperative Diagnosis:

Postoperative Diagnosis:

Postoperative Check 9 Procedure Performed:

Names of Surgeon and Assistants:

Type of Anesthesia Used:

Estimated Blood Loss (EBL):

Fluid and Blood Products Administered During Operation:

Specimens: Pathology, cultures, blood samples.

Drains and Tubes Placed:

Complications:

Consultations Intraoperatively:

Indications for Surgery: Brief history of patient and indications for surgery.

Findings: Describe gross findings and frozen section results relayed to operating room.

Description of Operation: Position of patient; skin prep and draping; location and types of incisions; details of procedure from beginning to end, including description of surgical findings, both normal and abnormal.

Intraoperative studies or x-rays; hemostatic and closure techniques; dressings applied. Needle and sponge counts as reported by operative nurse. Patient's condition and disposition. Send copies of report to surgeons and referring physicians.

Postoperative Check

A postoperative check should be completed on the evening after surgery. This check is similar to a daily progress note.

Example Postoperative Check

Date/time:

Postoperative Check

Subjective: Note any patient complaints, and note the adequacy of pain relief.

Objective:

General appearance:

Vitals: Maximum temperature in the last 24 hours (Tmax), current temperature, pulse, respiratory rate, blood pressure.

Urine Output: If urine output is less than 30 cc per hour, more fluids should be infused if the patient is hypovolemic.

Physical Exam:

Chest and lungs:

Abdomen:

Wound Examination: The wound should be examined for excessive drainage or bleeding, skin necrosis, condition of drains.

Drainage Volume: Note the volume and characteristics of drainage from Jackson-Pratt drain or other drains.

Labs: Post-operative hematocrit value and other labs.

Assessment and Plan: Assess the patient's overall condition and status of wound. Comment on abnormal labs, and discuss treatment and discharge plans.

10 Postoperative Orders

Postoperative Orders

- 1. Transfer:** From recovery room to surgical ward when stable.
- 2. Vital Signs:** q4h, I&O q4h x 24h.
- 3. Activity:** Bed rest; ambulate in 6-8 hours if appropriate. Incentive spirometer q1h while awake.
- 4. Diet:** NPO x 8h, then sips of water. Advance from clear liquids to regular diet as tolerated.
- 5. IV Fluids:** IV D5 LR or D5 ½ NS at 125 cc/h (KCL, 20 mEq/L if indicated), Foley to gravity.
- 6. Medications:**
 - Cefazolin (Ancef) 1 gm IVPB q8h x 3 doses; if indicated for prophylaxis in clean cases
 - OR** Cefotetan (Cefotan) 1 gm IV q12h x 2 doses for clean contaminated cases. Meperidine (Demerol) 50 mg IV/IM q3-4h prn pain Hydroxyzine (Vistaril) 25-50 mg IV/IM q3-4h prn nausea
 - OR** Prochlorperazine (Compazine) 10 mg IV/IM q4-6h prn nausea or suppository q 4h prn.
- 7. Laboratory Evaluation:** CBC, SMA7, chest x-ray in AM if indicated.

Postoperative Surgical Management

I. Postoperative day number 1

- Assess the patient's level of pain, lungs, cardiac status, flatulence, and bowel movement. Examine for distension, tenderness, bowel sounds; wound drainage, bleeding from incision.
- Discontinue IV infusion when taking adequate PO fluids. Discontinue Foley catheter, and use in-and-out catheterization for urinary retention.
- Ambulate as tolerated; incentive spirometer, hematocrit and hemoglobin.
- Acetaminophen/codeine (Tylenol #3) 1-2 PO q4-6h prn pain.
- Colace 100 mg PO bid.
- Consider prophylaxis for deep vein thrombosis.

II. Postoperative day number 2

- If passing gas or if bowel movement, advance to regular diet unless bowel resection.
- Laxatives: Dulcolax suppository prn or Fleet enema prn or milk of magnesia, 30 cc PO prn constipation.

III. Postoperative day number 3

- Check pathology report.
- Remove staples and place steri-strips.
- Consider discharge home on appropriate medications; follow up in 1-2 weeks for removal of sutures.

D. Write discharge orders (including prescriptions) in AM; arrange for home health care if indicated. Dictate discharge summary and send copy to surgeon and referring physician.

Surgical Progress Note 11

Surgical Progress Note

Surgical progress notes are written in “SOAP” format.

Surgical Progress Note

Date/Time:

Post-operative Day Number:

Problem List: Antibiotic day number and hyperalimentation day number if applicable. List each surgical problem separately (eg, status-post appendectomy, hypokalemia).

Subjective: Describe how the patient feels in the patient’s own words, and give observations about the patient. Indicate any new patient complaints, note the adequacy of pain relief, and passing of flatus or bowel movements. Type of food the patient is tolerating (eg, nothing, clear liquids, regular diet).

Objective:

Vital Signs: Maximum temperature (Tmax) over the past 24 hours. Current temperature, vital signs.

Intake and Output: Volume of oral and intravenous fluids, volume of urine, stools, drains, and nasogastric output.

Physical Exam:

General appearance: Alert, ambulating.

Heart: Regular rate and rhythm, no murmurs.

Chest: Clear to auscultation.

Abdomen: Bowel sounds present, soft, nontender.

Wound Condition: Comment on the wound condition (eg, clean and dry, good granulation, serosanguinous drainage). Condition of dressings, purulent drainage, granulation tissue, erythema; condition of sutures, dehiscence. Amount and color of drainage

Lab results: White count, hematocrit, and electrolytes, chest x-ray

Assessment and Plan: Evaluate each numbered problem separately. Note the patient’s general condition (eg, improving), pertinent developments, and plans (eg, advance diet to regular, chest x-ray). For each numbered problem, discuss any additional orders and plans for discharge or transfer.

12 Procedure Note

Procedure Note

A procedure note should be written in the chart when a procedure is performed.

Procedure notes are brief operative notes.

Procedure Note

Date and time:

Procedure:

Indications:

Patient Consent: Document that the indications, risks and alternatives to the procedure were explained to the patient. Note that the patient was given the opportunity to ask questions and that the patient consented to the procedure in writing.

Lab tests: Electrolytes, INR, CBC

Anesthesia: Local with 2% lidocaine

Description of Procedure: Briefly describe the procedure, including sterile prep, anesthesia method, patient position, devices used, anatomic location of procedure, and outcome.

Complications and Estimated Blood Loss (EBL):

Disposition: Describe how the patient tolerated the procedure.

Specimens: Describe any specimens obtained and laboratory tests which were ordered.

Discharge Note

The discharge note should be written in the patient’s chart prior to discharge.

Discharge Note

Date/time:

Diagnoses:

Treatment: Briefly describe therapy provided during hospitalization, including surgical procedures and antibiotic therapy.

Studies Performed: Electrocardiograms, CT scans.

Discharge medications:

Follow-up Arrangements:

Discharge Summary 13

Discharge Summary

Patient's Name:

Chart Number:

Date of Admission:

Date of Discharge:

Admitting Diagnosis:

Discharge Diagnosis:

Name of Attending or Ward Service:

Surgical Procedures, Diagnostic Tests, Invasive Procedures:

Brief History and Pertinent Physical Examination and Laboratory Data:

Describe the course of the patient's disease up to the time the patient came to the hospital, and describe the physical exam and pertinent laboratory data on admission.

Hospital Course: Briefly describe the course of the patient's illness while in the hospital, including evaluation, operation, outcome of the operation, and medications given while in the hospital.

Discharged Condition: Describe improvement or deterioration of the patient's condition.

Disposition: Describe the situation to which the patient will be discharged (home, nursing home) and the person who will provide care. **Discharged Medications:** List medications and instructions and write prescriptions.

Discharged Instructions and Follow-up Care:

Date of return for follow-up care at clinic; diet, exercise instructions.

Problem List: List all active and past problems.

Copies: Send copies to attending physician, clinic, consultants and referring physician.

Prescription Writing

Patient's name:

Date:

Drug name and preparation (eg, tablets size): Lasix 40 mg

Quantity to dispense: #40

Frequency of administration: Sig: 1 po qAM

Refills: None

Signature

Case scenarios.

DIRECTIONS: Each item below contains a question or incomplete statement followed by suggested responses. Select the one best response to each question.

1. In a 48-year-old man on the 7th day after appearance of a moderate pain in the chest, a hoarse cough with unpleasant smell sputum, a fever to 39⁰C has appeared. The patient's state is heavy. More than 600 ml of grey-green sputum per day discharge and shaking chills is noted. Roentgenogram reveals a cavity with horizontal fluid level on the background of non-homogeneous shadow in the lower lobe of the right lung. What disease the most probable?
 - A. Abscess in the right lung
 - B. Gangrene of the right lung
 - C. Hydatid disease of the right lung
 - D. Cyst suppuration in the right lung
 - E. Suppurative tubercular cavity
2. In a 9-month-old child with destructive pneumonia the general state has suddenly worsened: breathlessness has increased; an anxiety has appeared; the body temperature has increased to 38,4⁰C.

The X-ray of the thorax revealed a homogeneous shadow to the third rib on the left; mediastinal organs are partly displaced to the right. The most probable diagnosis.

- A. Tension pyopneumothorax
 - B. Pneumonia
 - C. Diaphragmatic hernia
 - D. Pyothorax
 - E. Lung atelectasis
3. A bus driver complains of periodic impurity of scarlet blood in stool during defecation. He is ill about one year. Bleeding appears after physical exertions and after alcohol intake. Stool is 1 time within 2-3 days; defecation is painless. Anal sphincter is not changed. Establish the initial diagnosis.
- A. Cancer of rectum
 - B. Internal haemorrhoids
 - C. Acute proctosigmoiditis
 - D. Acute fissure-in-ano
 - E. Chronic fissure-in-ano.
4. In a patient acute thrombosis of haemorrhoidal nodes has been diagnosed. There is oedema of the perianal area. There is regional necrosis in the haemorrhoidal nodes. What is the surgical tactics?
- A. Conservative treatment during 3-4 weeks, haemorrhoidectomy.
 - B. Haemorrhoidectomy at an attack.
 - C. Diet.
 - D. Rectal suppositories, sitting bath.
 - E. Ligature of the haemorrhoidal nodes.
5. A 78-year-old man suffers from thrombophlebitis of superficial veins of the right thigh. He is ill for 3 days. All this time he notes a progressing of inflammation from the lower to the upper third of the thigh. On survey a painful cord is being defined on the internal surface of the right thigh; the skin above it is hyperaemic. Which operative intervention is indicated for the patient?
- A. Troyanov's operation
 - B. Babcock's operation
 - C. Muller's operation
 - D. Hjusney's operation
 - E. Palma's operation
6. A two children's Mother complains of softly-elastic nodes on the external surface of the left thigh with transition to the leg and oedema on the foot at the end of the day. After night sleep the oedema disappears. The onset of illness she associates with pregnancy and childbirth. She wears elastic stockings. Establish the initial diagnosis.
- A. Acute thrombophlebitis of deep veins of the left leg
 - B. Acute thrombophlebitis of superficial veins of the left leg
 - C. Endarteritis obliterans of the left lower extremity
 - D. Varicose dilatation of subcutaneous veins of the left leg
 - E. Elephantiasis of the left lower extremity
7. A 32-year-old man complains of painful formation in the inguinal area which has appeared after lifting of a heavy thing. Earlier the protruded internal organs of the abdominal cavity in the right inguinal area could be reduced into the abdomen. He has been suffering from an inguinal hernia for 6 years. The formation in the inguinal area is painful, is intense and motionless. Locally there is an increase of skin temperature in the area of formation. There was a one-fold vomiting. The pain after palpation increases. The body temperature is elevated to 37,8⁰C. The general condition is worsening. The most probable diagnosis.
- A. Inguinal acute lymphadenitis.

- B. Inguinal strangulated hernia.
 C. Acute thrombophlebitis of the big saphena vein.
 D. Acute phlegmon in the inguinal area.
 E. Lipoma in the inguinal area
8. A patient is troubled by a pain in the zone of the hernial protrusion in the navel area. Hernial protrusion is painful, is 6 cm in diameter, is not being reduced into the abdominal cavity on careful palpation; the skin above it is not changed; a cough impulse sign is positive; the edge of the hernial ring is being defined. Establish initial diagnosis
- A. Irreducible umbilical hernia
 B. Strangulated umbilical hernia
 C. Retroperitoneal lipoma
 D. Urachus cyst
 E. Reducible umbilical hernia
9. A 55-year-old man suffers from bile stone illness. After alcohol and fried food intake engirdle pains in the epigastric area and in the back, nausea, repeated vomiting, which did not bring relief, appeared. The patient's state is progressively worsening. Breath is shallow. Cyanotic stains have appeared on the skin around navel and in the lumbar compartment. The abdomen is inflated. On palpation a big mass is being palpated in the epigastric area. P: 130/min. BP: 90/50mmHg. Daily diuresis: 500 ml. What diagnosis the most probable?
- A. Acute cholecystitis.
 B. Perforated gastric peptic ulcer.
 C. Toxic hepatitis.
 D. Liver cirrhosis.
 E. Acute biliary pancreatitis.
10. A 42-year-old man complains of a sharp burning engirdle pain in the epigastric area. On the background of a constant pain there are attacks of its strengthening which are accompanied by heartburn, repeated vomiting with bile and streaks of blood. She links her disease with a significant amount of fat spicy food intake yesterday. The patient is restless. The general state is moderate. P 94/min. BP: 150/90 mmHg. The plain roentgenogram of the abdominal cavity reveals pneumatosis of the transverse colon. WBC's: 10800/ L. Sugar in blood : 4,3 mmol/l. Urine diastase is 512 UNITS. What is the most probable diagnosis?
- A. Relapse of stomach peptic ulcer
 B. Perforated stomach peptic ulcer
 C. Acute cholecystitis
 D. Acute pancreatitis
 E. Relapse of urolithiasis

Skills.

- collect anamnesis of the disease
- carry out clinical inspection of the patient (survey, percussion, palpation, auscultation)
- give an estimation of laboratory data
- give an estimation of results of X-ray examination, ultrasound, computer tomography etc.
- carry out differential diagnosis with other diseases.
- distinguish the atypical form.
- establish contraindications for surgical treatment
- administer treatment
- assist at operation
- observe the patient
- take part in dressings, special examinations etc.
- make up the Case history

4. Summing-up

5. Recommended reading.

Basic:

1. SABISTON: TEXTBOOK OF SURGERY: THE BIOLOGICAL BASIS OF MODERN SURGICAL PRACTICE, TWENTY FIRST EDITION Copyright © 2020
2. Gozie Offiah, Arnold Hill//RCSI Handbook of Clinical Surgery for Finals. 4th ed. 2020
3. Цигикало О. В. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія.. Підручник для ВМНЗ IV р.а.: Рекомендовано МОЗ: 2020/ 528 с.
4. Березницький Я. С. (за ред.) General Surgery=Загальна хірургія. — 2-ге вид. Підручник для ВМНЗ III—IV р.а.: Рекомендовано ДУ“Центр.метод.каб.з вищої мед.освіти МОЗ України”: 2020/ 328 с.
5. Christian de Virgilio, Areg Grigorian//Surgery: A Case Based Clinical Review. 2nd Ed. 2020
6. General Surgery=Загальна хірургія: Підручник для мед. ун-тів., інст., акад. Затверджено МОН / За ред. С.Д. Хіміча, М.Д. Желіби. — К., 2019. — 536 с.
7. The Bethesda handbook of clinical oncology / editors, Jame Abraham, James L. Gulley. Fifth Edition. Copyright © 2019 Wolters Kluwer
8. JANE C. ROTHROCK// Alexander's Care of the Patient in Surgery. 16th Ed. 2019
9. RUTHERFORD'S VASCULAR SURGERY AND ENDOVASCULAR
a. THERAPY, 9th ed. Volume 1, Volume 2. Copyright © 2019 by Elsevier, Inc.
10. Medical management of thyroid disease / [edited by] David S. Cooper and Jennifer Sipos. Description: Third edition. | Boca Raton: Taylor & Francis, 2019.
11. Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine, 11th Ed. Copyright © 2019 by Elsevier Inc.
12. SEIDEL'S GUIDE TO PHYSICAL EXAMINATION: AN INTERPROFESSIONAL APPROACH. Copyright © 2019 by Elsevier, Inc.
13. Clinical Anatomy and Operative Surgery=Клінічна анатомія і оперативна хірургія: Підручник для мед. ун-тів, інст., акад. Рекомендовано Вченою радою Буковинського НМУ / О.М. Слободян, В.Ю. Єршов, Г.Ю. Костюк, В.І. Півторак; за ред. В.Ю. Єршова. — К., 2018. — 504 с.

Additional:

1. Bland/ Copeland/ Klimberg/Gradishar//The Breast. Comprehensive Management of Benign and Malignant Diseases. 5th Ed. 2018
2. James Chalmers, Eva Polverino, Stefano Aliberti//Bronchiectasis. 2018
3. Byung-Boong Lee, Stanley G. Rockson, John Bergan//Lymphedema. 2nd Ed. 2018.
4. David J. Terris// Thyroid and Parathyroid Diseases. 2nd edition. 2017
- 5.. Sabiston Textbook of Surgery. The Biological Basis of Modern Surgical Practice, 20th Ed. 2016
- 6.. Hamilton Bailey's Physical Signs: Demonstrations of Physical Signs in Clinical Surgery, 19th Edition Paperback – Import, by [John S.P Lumley](#) (Author), [Anil K. D'Cruz](#) (Author), [Jamal J. Hoballah](#) (Author), [Carol E.H. Scott-Connor](#) (Author) 25 Feb 2016
- 7.. Schwartz's Principles Of Surgery With DVD Hardcover – 2014 by [F. Charles Brunicaardi](#) (Author), [Dana K. Andersen](#) (Author), [Timothy R. Billiar](#) (Author), [David L. Dunn](#) (Author), [John G. Hunter](#) (Author), [& 2 More](#)

6. Electronic informative resources

1. <http://moz.gov.ua> – Міністерство охорони здоров'я України
2. www.ama-assn.org – Американська медична асоціація / [American Medical Association](#)
3. www.who.int – Всесвітня організація охорони здоров'я
4. www.dec.gov.ua/mtd/home/ - Державний експертний центр МОЗ України

5. <http://bma.org.uk> – Британська медична асоціація
6. www.gmc-uk.org - General Medical Council (GMC)
7. www.bundesaerztekammer.de – Німецька медична асоціація
8. <http://medforum.in.ua/partners>- Асоціація хірургів України
9. <http://endoscopy.com.ua/> - Асоціація ендоскопічних хірургів України
10. <http://thoracic-surgery.com.ua/> - Асоціація торакальних хірургів України
11. <https://youcontrol.com.ua/> - Асоціація судинних хірургів України