

MINISTRY OF HEALTH OF UKRAINE  
ODESA NATIONAL MEDICAL UNIVERSITY

Faculty Medicine

Department Surgery, Radiological Diagnostics, Radiation Medicine,  
Therapy and Oncology

APPROVED BY  
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METHODOLOGICAL RECOMMENDATIONS FOR PRACTICAL  
CLASSES OF THE ACADEMIC DISCIPLINE

Faculty, course Medical 6<sup>th</sup> year

Academic discipline Surgery

*(name of the discipline)*

PRACTICAL CLASSES

*Practical class № 6*

**Topic: “Abdominal pain, assessment of pain syndrome features in the  
differential diagnostics of the abdominal cavity diseases”**

**Approved:**

At the meeting of the Department of Surgery, Radiation Diagnostics, Radiation Medicine, Therapy and Oncology of Odesa National Medical University

**Odesa National Medical University**

**Protocol № 2 of '02' September 2024**

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# PRACTICAL CLASSES

## Practical class № 6

**Topic of the practical class: “Abdominal pain, assessment of pain syndrome features in the differential diagnostics of the abdominal cavity diseases” - 6 hours.**

**1. Relevance of the topic. This topic is relevant in terms of developing clinical thinking among specialists of various specialties and areas.**

### **2. Lesson Objectives:**

#### **2.1. Educational Objectives**

- to familiarize the higher education student with the concept of pain and its characteristics. –

**Level I**

- the student must know and master the pathogenesis of pain. **Level II**

- to provide the higher education student with the opportunity to master the skills of palpation, percussion, and auscultation of the abdomen.

**Level III**

- to provide higher education students with the ability to clinically analyse the data obtained during the examination of the patient. **Level III**

#### **2.2. Educational objectives are related to:**

- the formation of a professionally significant personality of a doctor;
- relevant aspects of professional activity.

### **3. Interdisciplinary integration**

<b>Disciplines</b>	<b>To Know</b>	<b>To Be able to</b>
1. Previous disciplines.  Anatomy  Pathophysiology	Topography of the abdominal cavity, pelvic organs and their innervation.  The concept of pain	
2. Next  Propaedeutics of internal diseases		Palpation Percussion Auscultation
3. Intra-subject integration. Topic Diaphragm. Research methods. Diaphragm damage. Diaphragmatic hernias.	Methods of examination of the abdominal organs, symptoms and syndromes of diseases of the abdominal organs.	Be able to conduct differential diagnosis of diseases of the abdominal organs

<p>Acute abdomen. Abdominal injuries.  External abdominal hernias.  Internal abdominal hernias.  Chemical burns and cicatricial strictures of the stomach.  Damage to the stomach and duodenum.  Peptic ulcer of the stomach and duodenum and its complications.  Gastric cancer. Liver injuries.  Liver abscesses.  Non-parasitic liver diseases.  Gallstone disease.  Mechanical jaundice.  Postcholecystectomy syndrome. Liver tumors.  Acute pancreatitis.  Pancreatic cancer. Pancreatic injuries. Spleen injuries.  Spleen diseases.</p>		
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#### 4. Lesson content

Pain is a subjective sensation, in the formation of which mechanical, physiological and chemical mechanisms participate. There are pain receptors, conductors and central mechanisms of pain integration. Peripheral pain (nociceptive) receptors perceive irritation, which in the reticular formation and thalamus of the brain are transformed into painful sensations. In the cerebral cortex they take on a specific character and are projected to the areas from which the irritation came, including the stomach.

Opiate, dopaminergic and serotonergic mechanisms of the endogenous analgesic (antinociceptive) system participate in the regulation of pain sensitivity. The influence of the mechanisms of the pain system on pain sensations can be observed on the example of a change in symptoms during perforation of a duodenal ulcer, when suddenly occurring "dagger" abdominal pain gradually subsides during a period of "imaginary well-being", despite the progression of peritonitis. The decrease in pain intensity in these cases is associated with the activation of antinociceptive mechanisms. Subjective "improvement" of the patient's condition can mislead both the patient and the doctor. However, when analysing objective clinical data, clear signs of progressive

peritonitis can be detected (increased pulse and respiration, abdominal distension caused by intestinal paresis, leukocytosis).

When interviewing a patient, it is necessary to find out the onset of pain (sudden, gradual), their spread over time (initial and later localization, irradiation), changes in their intensity and character. It is important to identify the relationship of pain with food intake, changes in body position. It is worth finding out the accompanying pain, symptoms (dyspepsia, dysuria, increased body temperature, changes in pulse and respiratory rate, blood pressure).

It is customary to distinguish between visceral, somatic, viscerosomatic pain.

Visceral pain comes from the organs of the abdominal cavity, which are innervated by branches of the autonomic nervous system. They arise from stretching (swelling or spasm) of the hollow organs of the digestive tract, urinary system, stretching of the membranes of parenchymal organs (liver, spleen). Visceral pain is perceived as diffuse, spreading to the side of the midline of the abdomen.

Pain localized in the epigastric region is caused by diseases of the stomach, duodenum, liver, gallbladder, pancreas, spleen.

Pain in the mesogastric region occurs in diseases of the small and large intestine, appendix.

Pain in the hypogastric region occurs in diseases of the left half of the transverse colon, descending colon, sigmoid and rectum. In renal colic, pain is localized in the lumbar region on the right or left.

By analysing the nature of visceral pain, it is possible to determine which layers of the organ wall are involved in the pathological process. Burning is observed with inflammatory changes or defects in the mucous membrane of the organ. In these cases, due to the damaged protective barrier of the mucous membrane, the reverse diffusion of H<sup>+</sup> ions increases and the pH of the organ wall tissues changes (for example, with reflux gastritis, peptic ulcer disease, reflux esophagitis).

A feeling of squeezing, squeezing occurs with spasm of the muscles of the hollow organ (spastic pain). Visceral pain can be paroxysmal in nature. They manifest as colic (gastric, biliary, intestinal and renal).

Paroxysmal pain (colic) is caused by increased contraction of the smooth muscles of the hollow organ, which seeks to overcome the obstacle to emptying the contents.

During acute attacks, the patient is restless, changes position, seeks a position in which the pain would be less intense.

On palpation, the soreness is not clearly localized, slightly expressed. During attacks, the abdomen is tense, between attacks it is soft. Pain may be accompanied by nausea, vomiting, pale skin, sweating.

Somatic pain occurs when the sensory fibers of the intercostal nerves innervating the parietal peritoneum, mesentery, lesser omentum are irritated, as well as when the diaphragmatic nerves innervating the diaphragmatic peritoneum are irritated.

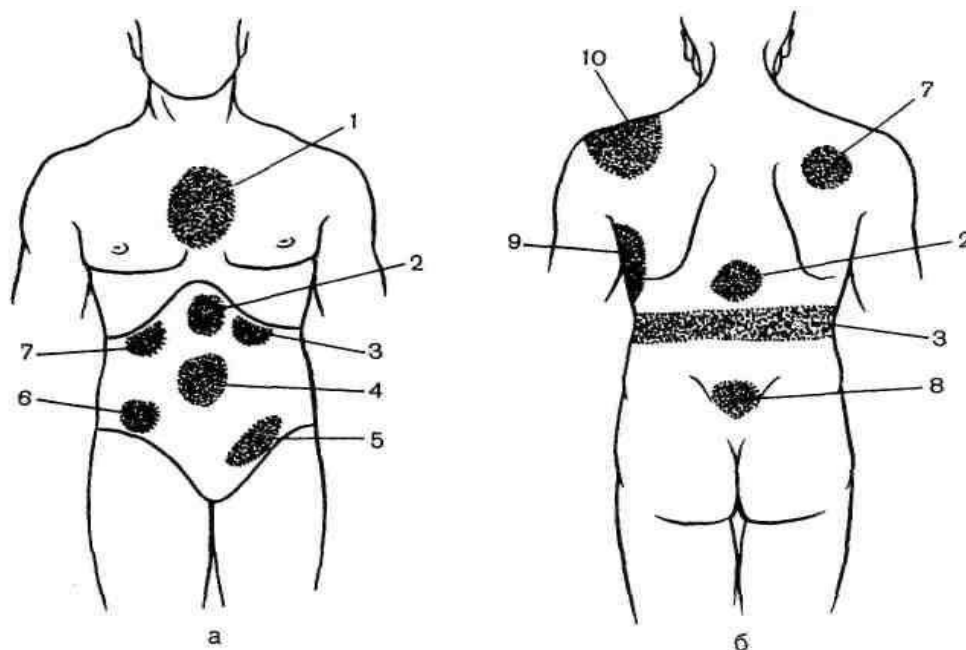


Рис. 9.1. Локализация (а) и иррадиация (б) соматических болей.

1 — пищевод; 2 — желудок и двенадцатиперстная кишка; 3 — поджелудочная железа; 4 — тонкая кишка; 5 — сигмовидная кишка; 6 — слепая кишка, червеобразный отросток; 7 — печень, желчный пузырь; 8 — матка; 9 — плевра; 10 — селезенка, кровь или гной под диафрагмой.

Somatic pain can be caused by:

- 1) inflammatory or tumor infiltration of the peritoneum, tension, friction of surfaces changed by the inflammatory process;
- 2) irritation of the peritoneum by gastric and intestinal contents, bile, pancreatic juice, blood, urine;
- 3) damage to the intercostal nerves outside the peritoneum (hematoma, infiltrate, tumor);
- 4) inflammation of the nerve roots of the spinal cord.

The localization of somatic pain corresponds to the site of irritation of the parietal peritoneum (Fig. 9.1). They can be cutting, burning, constant. The intensity of somatic pain is sharply expressed in

perforation of a hollow organ into the free abdominal cavity ("dagger" pain), in arterial embolism and thrombosis of the mesenteric vessels.

Referred pain occurs when the intercostal nerve endings in the parietal peritoneum or mesentery are irritated. Knowledge of the typical areas of radiating pain, sometimes located far from the affected organ, can help in recognizing the condition (see Fig. 9.1).

The patient avoids movement, because changing position intensifies the pain. Palpation determines the area of pain, the tension of the muscles of the anterior abdominal wall, which are innervated by the corresponding intercostal nerves. The tremor of the abdominal wall causes pain, because the degree of stretching of the peritoneum changes (Shchetkin-Blumberg symptom). The transition of visceral pain to somatic is an alarming symptom, indicating the transition of inflammation from one of the organs of the abdominal cavity to the parietal peritoneum. An example is the course of acute appendicitis. At the beginning of the disease, when the inflammation is limited only to the appendix, its visceral peritoneum, the patient feels widespread pain around

the navel, at this time there is no tension of the muscles of the abdominal wall. When the inflammation passes to the parietal peritoneum and the mesentery of the appendix, the pain moves to the right iliac region, becomes acute, localized. Muscle tension and soreness appear in the right iliac region.

When questioning a patient about abdominal pain, it is recommended to ask questions clearly to clarify the nature of the pain, its localization. With unclear localization, the pain is visceral. Exact localization of pain is possible with somatic pain. It is necessary to clarify the periodic or constant nature of the pain, factors that provoke pain: emotional stress (with duodenal ulcer), certain food (with ulcer, with chronic cholecystitis), horizontal or forward-bent body position (reflux of gastric contents into the esophagus with hiatal hernia).

The identification of factors that eliminate pain or reduce its intensity may be of diagnostic importance.

Examination of the patient should always begin with a general examination. From the patient's suffering expression on his face, it is possible to determine that he is in pain. Pale skin colour is characteristic of anaemia associated with blood loss.

When examining the eyes, yellowness of the sclera and pallor of the conjunctiva can be detected. Dryness of the mucous membranes of the oral cavity and skin is usually expressed in diseases accompanied by disturbances of water and electrolyte balance.

Examination of the abdomen is carried out in the vertical and horizontal positions of the patient. In the vertical position, the normal configuration of the abdomen is characterized by moderate depression of the epigastric region and some protrusion of the lower half of the abdomen. In the supine position, in non-smooth patients, the level of the anterior abdominal wall is below the level of the chest surface.

Uniform protrusion of the abdomen is observed in obesity, accumulation of fluid in the abdominal cavity (ascites), and intestinal paresis. Uneven protrusion of the abdominal wall can occur with external abdominal hernias, tumours emanating from the abdominal wall, abdominal cavity, intestinal obstruction.

Changes in the configuration of the abdominal wall are observed with excessive strengthening of the peristalsis of the stomach and intestines.

In patients who are not obese, the stomach is retracted due to a sharp tension of the muscles of the anterior abdominal wall (a symptom of muscle protection, irritation of the peritoneum, caused by the visceromotor reflex).

In the presence of postoperative scars on the abdominal wall, their localization, size, and defects in the abdominal wall in the area of the scar (postoperative ventral hernias) are noted.

In the umbilical region, a radiating arrangement of twisted subcutaneous veins ("medusa head") is observed in portal hypertension, i.e., difficulty in the outflow of blood from the portal vein. The appearance of dilated venous anastomoses between the femoral and inferior epigastric veins in the lower lateral parts of the abdomen indicates difficulty in the outflow of blood through the inferior vena cava.

During breathing, the abdominal wall rises evenly on inspiration and falls on expiration. The absence of oscillatory movements in any area or the entire abdominal wall during breathing is observed with protective muscle tension as a result of the visceromotor reflex that occurs when the peritoneum is irritated. It is advisable to check the possibility of active inflation and rapid retraction of the abdomen. In acute inflammatory processes in the abdominal cavity, it is sometimes impossible to inflate the abdomen due to a sharp increase in pain and tension of the abdominal wall muscles (Rozanov's symptom). In inflammatory processes localized extra peritoneally (pleuropneumonia, diaphragmatic pleurisy), inflation and retraction of the abdomen are possible, despite abdominal pain. Rozanov's symptom allows you to distinguish acute inflammatory processes in the abdominal cavity from extraperitoneal ones. When coughing, abdominal pain occurs in the area of the excited organ. This is one of the signs of peritoneal irritation. When coughing and straining, you can see the protrusion of the abdominal wall in the places of localization of external hernias. Percussion of the abdomen is performed to determine the boundaries of the liver, spleen, and the size of pathological formations in the abdomen (tumour, infiltrate, abscess). A sonorous percussion sound occurs when gas accumulates in the intestines (flatulence), in the abdominal cavity (pneumoperitoneum), or when a hollow organ containing gas is perforated (disappearance of hepatic dullness).

To detect accumulation of fluid in the abdominal cavity (ascites, exudate, hemoperitoneum), comparative percussion of the abdomen is performed with the patient on his back, and then in the position on the right and left side. In the supine position, dullness of percussion sound in the lateral parts of the abdomen indicates the presence of fluid in the abdominal cavity; in the lateral position, the zone of dullness of percussion sound on the corresponding half of the abdomen increases, and in the area where dullness was previously determined, a tympanic shade of percussion sound appears. In the vertical position of the patient, percussion of the abdomen is performed in the direction from top to bottom along the mid- and mid-clavicular lines. The zone of dullness of percussion sound above the bosom with a concave upper border is a sign of accumulation of free fluid in the abdominal cavity; the zone of dullness with an upper horizontal border and tympanites above it is a sign of accumulation of fluid and gas; a zone of dullness of percussion sound with a convex upward border is a sign of bladder overfilling, uterine enlargement, and the presence of an ovarian cyst.

To detect fluid in the abdominal cavity, the undulation method is also used - determining the wave-like oscillation of the fluid, which is transmitted to the opposite side when applying short shocks to the abdominal wall. The doctor places the palm that receives the shocks on the lateral side of the abdomen. On the opposite side, the fingers of the other hand, half-bent, make intermittent shocks, which, if there is fluid, are determined on the opposite side by the receiving palm. To avoid an erroneous conclusion, it is necessary to exclude the transmission of the shock along the abdominal wall. To do this, the doctor asks the patient or nurse to place the hand with the edge along the midline of the abdomen.



The localization of the inflammatory process is clarified by determining the zone of maximum percussion pain (a sign of local irritation of the peritoneum). Tapping with half-bent fingers or a rib of the hand on the right costal arch can cause soreness in the right hypochondrium (Grekov-Ortner symptom), which is observed with inflammation of the gallbladder, bile ducts, pathological changes in the liver. Palpation of the abdomen is performed in different positions of the patient. When examining in a horizontal position on the back to relax the muscles of the abdominal wall, the patient is asked to bend his legs at the knee joints and slightly spread them to the sides. Palpation is done in such a way that the painful area identified during questioning and percussion is examined last.

The tension of the muscles of the anterior abdominal wall and the localization of pain are determined by oriented superficial palpation. To do this, lightly press the palm on symmetrical areas of the abdominal wall. Muscle tension is judged by the resistance felt by the hand during palpation. The study begins with a less painful area. According to the degree of muscle tension, slight resistance, pronounced tension, and plank-like muscle tension are distinguished.

Abdominal muscle tension can be limited or widespread, which is one of the most important symptoms of peritoneal inflammation, and can be observed in diseases of organs located extra peritoneally (diaphragmatic pleurisy, lower lobe pleuropneumonia, myocardial infarction, renal colic), as well as in hematomas and abscesses in the retroperitoneal space.

Superficial palpation of the abdomen reveals the greatest tenderness in the area corresponding to the location of the excited organ and the adjacent parietal peritoneum.

In peritonitis, the Shchetkin-Blumberg symptom is usually determined: to detect this symptom, the palm is placed on the abdominal wall. When pressing on the abdominal wall with the fingertips of the palm lying on the abdominal wall, tenderness appears, which at the moment of sudden withdrawal of the palpating hand sharply increases due to the tremor of the excited parietal peritoneum.

The peritoneum is more accessible for palpation in the area of the navel, the posterior wall of the inguinal canal, and digital examination of the rectum and vagina. The resulting tenderness is a sign of the spread of peritoneal inflammation to the corresponding areas of the abdomen.

After superficial palpation, deep sliding palpation of the abdomen is performed according to the Obratsov-Strazhesko method. Palpation of the internal organs of the abdomen should be carried out in time with the respiratory movements of the abdominal wall in different positions of the patient: upright, lying on the back, on the right and left side. Changing the position of the body allows you to determine not only the localization of the tumor, but also its displacement, prevalence. Auscultation of the abdomen allows you to determine peristaltic intestinal noises, their strengthening or sharp weakening, to detect systolic noise in stenosis of the large arterial trunks and the aorta. The stethoscope is placed not only on the typical point located 1-2 cm to the right and below the navel, but also in other departments. Normally, intestinal noises in the form of a muffled, gurgling, iridescent sound occur at uneven intervals with a

frequency of 5-10 per minute. A high frequency of bowel sounds that acquire a sonorous tone is characteristic of the first phase of mechanical intestinal obstruction. The absence of bowel sounds indicates intestinal paresis or paralytic obstruction, which is observed in peritonitis.

The sound of liquid splashing is a sign of accumulation of fluid and gas in the hollow organs of the abdomen, it is often detected in intestinal obstruction,

Auscultation along the midline in the upper half of the abdomen allows you to find a systolic sound over an aortic aneurysm, over the visceral arteries when they are narrowed by atherosclerotic plaques or compression stenoses. Systolic sound in stenosis of the abdominal aorta is heard immediately below the navel and 2 cm to the left of the midline over the iliac arteries - in the areas of their projection onto the abdominal wall.

Digital rectal examination allows to determine the tone of the sphincter, the contents of the intestine (feces, blood, mucus), the condition of the prostate gland, the uterus. Tumours of the anal and lower ampullary parts of the intestine, infiltrates in the pelvis (with pararectal abscesses), metastases of cancer in the pelvic peritoneum (Schnitzler metastases), tumors of the sigmoid colon, uterus and ovaries can also be detected.

Vaginal examination is performed in all women to detect gynaecological diseases, pelvic tumours, and tumour metastases.

*Instrumental research methods.*

### **General recommendations for diagnosing diseases of the abdominal organs**

When interviewing a patient, it is necessary to detail the characteristics of each symptom, group symptoms into syndromes, symptom complexes.

Based on the analysis of subjective and objective examination data, it is necessary to synthesize the signs of the disease, formulate a diagnostic hypothesis about the most probable and least probable diseases.

The doctor's clinical thinking allows you to purposefully choose further methods of examining the patient at each stage. Based on the analysis and synthesis of

the results of the patient's studies, a clinical diagnosis is formulated. First of all, the diagnosis of the underlying disease for which the patient was admitted is recorded. Then the nature and degree of functional disorders, the degree of their compensation or the stage of the disease, the presence of complications of the underlying disease are noted. One should not forget about background and concomitant diseases. They are included in the detailed clinical diagnosis.

Clinical diagnosis is the basis for choosing the most informative methods of instrumental and laboratory research, clarifying the clinical diagnosis and choosing the optimal treatment.

The term "acute abdomen" refers to suddenly developed acute, life-threatening diseases of the abdominal organs, which require or may require urgent surgical or other assistance. In rare cases, symptoms of an acute abdomen are observed in diseases of organs located outside the abdominal cavity. The diagnosis is temporary, it is made in an emergency situation, when there is no time and conditions for a detailed examination

and there is no possibility to accurately determine the cause of the disease in a patient who needs immediate medical care.

The primary medical examination of the patient is often carried out outside the hospital (at home or in a polyclinic). The task of the primary diagnosis of "acute abdomen" is to recognize a dangerous situation and the need for urgent treatment. In acute abdomen, the prognosis worsens over time, so the patient should be urgently hospitalized in a hospital, where the necessary diagnostic and therapeutic measures will be carried out in the near future.

The main clinical symptoms of acute abdomen — abdominal pain, vomiting, bleeding, shock, a sharp increase in body temperature, pulse rate and respiration — may be due to the following reasons.

1. Intra-abdominal inflammatory diseases requiring emergency surgery (Fig. 9.2):

- appendicitis and its complications;
  - mechanical acute intestinal obstruction (colon cancer, adhesions, external and internal strangulated hernias, intestinal intussusception, etc.) with or without mesenteric strangulation;
  - acute destructive cholecystitis;
  - perforation of an ulcer, diverticulum of the colon and other hollow organs;
  - acute hemorrhagic pancreatitis;
  - embolism or thrombosis of mesenteric vessels;
  - peritonitis and abscesses of the abdominal cavity (abscessing salpingitis).
2. Acute gastrointestinal bleeding:
- bleeding gastric ulcer or duodenal ulcer;
  - varicose veins of the esophagus and cardia;
  - Mallory-Weiss syndrome;
  - hemorrhagic gastritis;
  - malignant and benign tumors of the stomach, small intestine and colon;
  - anorectal bleeding.

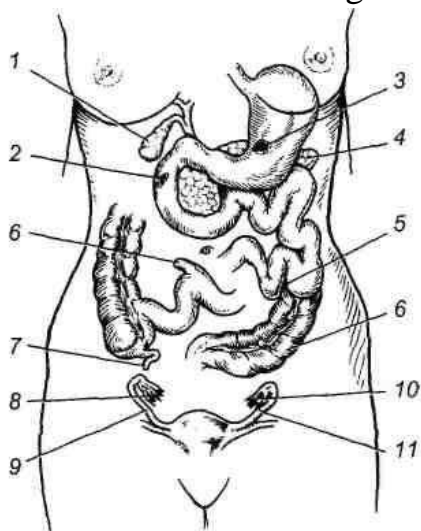


Рис. 9.2. Причины острого живота.

1 — желчная колика, острый деструктивный холецистит; 2 — перфорация язвы двенадцатиперстной кишки; 3 — перфорация язвы желудка; 4 — острый геморрагический панкреатит; 5 — острая кишечная непроходимость; 6 — острый дивертикулит; 7 — острый перфоративный аппендицит; 8 — разрыв овариальной кисты; 9 — острый абсцедирующий сальпингит; 10 — перекрут

3. Penetrating wounds and blunt trauma of the abdomen with damage to the spleen, liver, pancreas, intestines.

4. Diseases of the abdominal cavity organs that do not require urgent surgery:  
—gastrointestinal (gastroenteritis, penetrating ulcer, acute cholecystitis and hepatic colic, hepatitis, acute hepatic porphyria, yersiniosis, pseudomembranous enterocolitis, peritoneal carcinomatosis);

—gynecological (salpingitis, dysmenorrhea, lower abdominal pain in the middle of the menstrual cycle);

—renal (renal colic, pyelonephritis, renal infarction, paranephritis, acute hydronephrosis).

5. Extra-abdominal diseases:

—cardiovascular (myocardial infarction, dissecting aortic aneurysm, pericarditis, congestive liver, angina abdominalis, or abdominal frog);

—pleuropulmonary (pneumonia, pleurisy, pulmonary embolism);

—urogenital (acute urinary retention, ovarian torsion);

—neurological (Schmorl's hernia, or intervertebral disc);

—transverse paralysis due to spinal cord injury (myelitis, trauma), hysteria;

—musculoskeletal injuries (vertebral fractures, ribs);

—others (diabetic and uremic coma, hemolytic and leukemic crises, hemorrhagic Schönlein-Henoch purpura, Werlhof's disease, acute porphyria, intoxication with lead and arsenic poisoning, collagenoses, etc.).

The primary examination of the patient includes the following methods. *Anamnesis.* Time and onset of pain (sudden, gradual), localization of pain, dyspeptic and dysuric phenomena, temperature, past diseases of the abdominal organs and operations on the abdominal organs.

When collecting a gynecological anamnesis, it is worth paying attention to past gynecological diseases, menstrual cycle, time of the last menstruation. The cause of abdominal pain in the middle of the menstrual cycle may be ovarian apoplexy, with a delay in menstruation, ectopic pregnancy should be excluded.

*Examination.* Attention is paid to the forced position of the patient, anxiety, frequent changes in posture, adynamia, lethargy, signs of dehydration (sharpened facial features, dryness of visible mucous membranes, pallor, yellowness of the skin), excretions (character of vomit and stool, blood impurities).

Slow straightening of the folded skin can be considered a sign of decreased skin turgor due to dehydration.

Temperature is determined more often in the armpit or in the rectum, where it is usually higher.

Pulse, blood pressure must be measured again. Also mandatory are examinations of the heart, lungs (percussion, auscultation).

In case of bleeding, dehydration, to determine the deficit of the volume of fluid circulating in the vascular bed, you can focus on the index of shock according to Algovner (the heart rate is divided by the value of systolic blood pressure). The normal index is 0.5, the index of threatening shock is 1.0, the index of shock is 1.5.

With a shock index equal to 1, the volume of circulating fluid is approximately reduced by 30%; with an index of up to 1.5, the loss reaches 50%, and with an index of 2, when the heart rate reaches 140 in 1 min., systolic pressure is 70 mm Hg. Art., the volume of circulating fluid is reduced by 70%.

Abdominal examination is performed according to the above recommendations: inspection, percussion, palpation, rectal and vaginal examination.

Do not administer drugs and antibiotics until the diagnosis is established!

If the patient is in shock during transportation in a specialized vehicle, anti-shock measures must be taken.

The patient's examination in the hospital is carried out according to the rules outlined above.

Laboratory tests should include determination of haemoglobin, haematocrit, leukocyte count, erythrocyte sedimentation rate, differential white blood cell count, blood type and Rhesus status, liver and pancreatic enzymes, and a complete urine test.

In patients with acute abdomen, it is not always possible to determine the nature of the disease based on clinical examination alone. Therefore, it is recommended to perform an ultrasound of all abdominal organs and the retroperitoneal space. This method often detects pathological changes that are not manifested by clear clinical symptoms (preclinical stage of the disease).

X-ray examination. Upon admission, a chest and abdominal x-ray (from the diaphragm to the symphysis) is performed to detect diaphragmatic mobility, accumulation of free gas under the diaphragm or in the intestines (flatulence), fluid levels in the intestines (intestinal obstruction), and darkening (exudate).

X-ray examination of the esophagus and stomach with oral administration of a water-soluble contrast agent is indicated if perforation of the stomach or duodenum is suspected. In some cases, irrigoscopy is necessary (if colonic obstruction is suspected). In cases that are difficult to diagnose (inflammation, organ damage), *laparoscopy* is performed. It is practically equivalent to diagnostic (trial) laparotomy.

In the absence of equipment, a simple study can be recommended - laparocentesis. A catheter is inserted into the abdominal cavity through a small incision in the abdominal wall along the midline of the abdomen, in the middle of the distance between the navel and the symphysis, and a small amount of isotonic sodium chloride solution is passed through it in different directions. Then the fluid is aspirated and subjected to visual and laboratory evaluation. Blood impurities in the lavage fluid indicate intra-abdominal bleeding, the appearance of gastric or intestinal contents in it - perforation of a hollow organ, and the appearance of cloudy exudate - peritonitis.

Differential diagnosis. Based on complaints, data from objective and instrumental studies, it is necessary to first of all exclude diseases of extraperitoneal organs that mimic an acute abdomen: myocardial infarction, basal pleuropneumonia, spontaneous pneumothorax, renal colic, Schönlein-Henoch capillary toxicosis. Then choose the optimal research program for differential diagnosis of acute diseases of the abdominal cavity. With modern possibilities of instrumental diagnostics (ultrasound, X-ray and

endoscopic methods, laboratory tests), establishing the disease that caused the clinical picture of an acute abdomen is not difficult.

### 5. Lesson plan and organizational structure.

№	The main stages of the lesson, their functions and content.	Learning objectives in levels of mastery.	Training and control tools.	Materials on methodological support for lesson clarity and monitoring of students' knowledge.	Time limits (in minutes or %) of the total learning hour.
2	Preparatory stage	Check the knowledge of higher education applicants and their level of training	Seminar		10%
	Main stage	Formation of professional skills, skills, conducting curation, determining a treatment regimen, conducting laboratory research	Test tasks	Working with patients in the departments of general surgery and gastrosurgery	60%
3	Final stage	Control and stages of the level of professional skills and abilities, summing up the lesson, homework	Daily survey of higher education applicants, practical skills test	Conducting classes in the practical skills room	30%

### 6. Materials on methodological support of the lesson.

6.1. Control materials for the preparatory stage of the lesson: questions of the test task "initial level of knowledge".

6.2. Materials on methodological support of the main stage of the lesson: Methodological developments of the department on the topics of diseases of the abdominal organs and the formation of practical skills and abilities.

6.3. Control materials for the final stage of the lesson: situational tasks:

1. Patient K., 26 years old, fell ill 10 hours ago, after pain appeared in the lower abdomen, in connection with this she went to the hospital, where she was hospitalized with a diagnosis of: "Acute appendicitis". Ectopic pregnancy. Which study is the most informative for differential diagnosis?

A. Puncture of the posterior vaginal vault.

B. Thoracocentesis.

C. Laparotomy.

D. EFGS.

E. Ultrasound of the abdominal cavity.

2. Patient N., 34 years old, hospitalized with a diagnosis of acute pancreatitis. He has been ill for 9 days, complaining of pain in the epigastrium and in the left hypochondrium, nausea, vomiting. Examination revealed leukocytosis and sharply increased urine diastasis. Which of the indicators will be the main one for immediate surgical intervention?

A. Peritonitis.

B. He has been ill for 9 days.

C. Sharply increased urine diastasis.

D. Leukocytosis.

E. Constant pain in the epigastrium and hypochondrium.

3. Patient O., 33 years old, was hospitalized with complaints of cutting pain in the epigastric region. Objectively: the abdomen is tense in all departments. Shchetkin's symptom is detected. Diagnosis: perforated gastric ulcer. Which of the following methods is the most informative for confirming the diagnosis?

A. Survey radiography of the abdominal cavity.

B. Laparocentesis.

C. ECG.

D. Ultrasound of the abdominal cavity.

E. Laparoscopy.

4. Patient L., 24 years old, came to the hospital with complaints of pain in the lower abdomen, weakness, nausea, fever up to 38°C. She has been ill for 3 days. During the examination in the emergency department, the diagnosis was established: acute appendicitis, peritonitis. The necessary access for the operation will be:

A. Median laparotomy.

B. According to Pyrohov.

S. According to Volkovych - Diakonov.

D. Pararectal.

E. According to Pfannenstiel.

5. Patient S., 63 years old, considers himself sick for the last six months after he complained of stool retention and weight loss of up to 20 kg. He went to the hospital a

day after the onset of pain in the left half of the abdomen. The examination revealed indications for immediate surgical intervention. During the operation for widespread peritonitis, a perforation of the cecum tumor was detected. What operation would be the most optimal?

- A. Suturing the perforation site, ileostomy.
- B. Right-sided hemicolectomy.
- C. Resection of the cecum, ileotransverse anastomosis.
- D. Ileostomy.
- E. Drainage of the abdominal cavity.

6. Patient M., 38 years old, hospitalized with a diagnosis of pelvioperitonitis. She has been ill for 7 days, temperature 38.5°C. She complains of pain in the lower abdomen. The tongue is dry, pulse 96 beats/min, the abdomen is sharply painful in the lower sections upon palpation, a positive Shchetkin symptom is determined. Treatment tactics:

- A. Laparotomy.
- B. Infusion detoxification therapy.
- C. Diagnostic cleaning.
- D. Ultrasound of the pelvic organs.
- E. Anti-inflammatory therapy.

7. Patient L., 29 years old, was admitted to the department with a strangulated inguinal hernia, gangrene of the intestine, and phlegmon of the anterior abdominal wall. Your surgical tactics:

- A. Laparotomy, resection of the strangulated organ, opening and drainage of the phlegmon of the abdominal wall.
- B. Opening and drainage of the phlegmon.
- C. Antibacterial and anti-inflammatory therapy.
- D. Laparotomy, revision of the abdominal cavity.
- E. Anterior wall plastic surgery.

8. Patient N., 26 years old, complains of epigastric pain, which gradually shifted to the right half of the abdominal cavity, nausea, temperature 37.3°C. He has been ill for 10 hours. He had not been ill with anything before. What diagnosis would be the most likely?

- A. Acute appendicitis.
- B. Acute pancreatitis.
- C. Acute cholecystitis.
- D. Perforating ulcer.
- E. Renal colic.

9. A 45-year-old patient was admitted with a diagnosis of acute appendicitis, appendicular infiltrate. She has been ill for 7 days, temperature 39°C. Conservative treatment is ineffective. What is your further strategy?

- A. Laparotomy, opening of the appendicular abscess according to Volkovich.
- B. Continuation of antibacterial, anti-inflammatory therapy.
- C. Laparoscopy.



D. Laparocentesis.

E. Puncture of the posterior vaginal vault.

10. A 65-year-old patient was admitted to the clinic for planned surgical treatment of gallstone disease with chronic calculous cholecystitis. The patient underwent cholecystectomy. In the postoperative period, the patient had about 50 ml of bile released into the drainage, which was installed in the suprahepatic space. Your tactics:

A. Active observation of the patient + conservative treatment.

B. Immediate laparotomy.

C. Laparocentesis.

D. Laparoscopy.

E. Endoscopic papillosphincterotomy.

11. A 56-year-old patient was admitted to the hospital with complaints of sharp pain in the left abdomen and weakness. The examination revealed indications for emergency surgery. During surgery for peritonitis, the patient was found to have a tumor perforation in the lower 1/3 of the sigmoid colon. What will be the scope of the surgery?

A. Hartmann's operation.

B. Suturing of the tumor perforation.

C. Left-sided hemicolectomy.

D. Sigmoid resection with primary anastomosis.

E. Double-barreled transversostomy.

12. The patient came to the clinic with a diagnosis of appendicular infiltrate. He complained of pain in the right iliac region, an increase in body temperature to 38°C. The patient was given antibacterial therapy. On the 7th day, pain appeared in the lower abdominal cavity, symptoms of peritoneal irritation. Your tactics:

A. Laparotomy, drainage of the abdominal cavity, appendicular abscess.

B. Continue antibacterial therapy with a change in antibiotic.

C. Laparoscopy, drainage of the abdominal cavity.

D. Opening of the appendicular abscess using Pyrohov's access.

E. Laparotomy, cecostomy, drainage of the abdominal cavity.

13. A 21-year-old patient, taken to the hospital by ambulance, was diagnosed with a perforated duodenal ulcer during examination. During the operation, perforation of an acute duodenal ulcer was found, the edges of the ulcer were soft, and peritonitis was limited in the abdominal cavity. The scope of the surgical intervention:

A. Removal of the ulcer, drainage of the abdominal cavity.

B. Judd's operation and trunk vagotomy.

C. Antrumectomy, vagotomy.

D. Opel-Polikarpov operation.

E. Gastric resection according to B - I.

14. A 38-year-old patient was admitted to the hospital with complaints of pain in the lower abdomen, during the examination the gynecologist and surgeon suspected acute appendicitis. Indications for surgical intervention were established. During the operation, the following were found: right-sided pyosalpinges, secondary appendicitis. Scope of the operation?

- A. Resection of the right appendages, appendectomy.
  - B. Resection of the right fallopian tube and ovary, drainage of the abdominal cavity.
  - C. Appendectomy, drainage of the abdominal cavity.
  - D. Sanitation and drainage of the fallopian tube.
  - E. Resection of the fallopian tube, appendectomy, drainage of the abdominal cavity.
15. A 34-year-old patient had previously undergone surgery for a penetrating stab wound to the abdominal cavity with a wound to the small intestine. He went to the hospital with complaints of nausea, vomiting, gas retention and stool. The operation revealed ileal small intestinal obstruction and peritonitis. The scope of the operation:
- A. Dissection of adhesions, intubation of the small intestine, drainage.
  - B. Dissection of adhesions, drainage of the abdominal cavity.
  - C. Resection of a section of the small intestine at the site of entrapment.
  - D. Intubation of the small intestine with resection of the entrapped section of the intestine and anastomosis.
  - E. Resection of the entrapped section of the small intestine and anastomosis.
16. Patient K., 39 years old, hospitalized with a diagnosis of acute pancreatitis. She has been ill for 7 days. The skin of the abdomen is pale, cyanotic, with purple hues. Which of the following symptoms correspond to this?
- A. Holsted, Mondor, Küllen.
  - V. Mayo - Robson, Chukhrienko, Spasokukotskyi.
  - S. Gobie, Liakhovitskyi, Vigiatso.
  - D. Gray - Turner, Grunwald, Kulenkampf.
  - E. Cope, Posner, Promytov.
17. Patient D., 23 years old, at 22 weeks of pregnancy, hospitalized with complaints of pain in the right hypochondrium, nausea, vomiting, temperature 37.2°C. Symptoms of peritoneal irritation are positive. Your diagnosis? Treatment tactics?
- A. Surgical intervention.
  - B. Dynamic observation.
  - C. Infusion detoxification therapy.
  - D. Dynamic observation, administration of antispasmodics.
  - E. Antibacterial therapy.
18. Patient S., 33 years old, has been acutely ill for 2 weeks. After eating fatty food, pain appeared in the right hypochondrium. She did not go to the hospital, she took antispasmodics. She stopped the pain on her own, after 2 days, icterus of the sclera and skin appeared. Then the patient's condition worsened, and the woman was hospitalized in a hospital with a clinic of acute destructive cholecystitis, jaundice. Operative tactics:
- A. Cholecystectomy with drainage of the biliary tract.
  - B. Cholecystectomy, drainage of the abdominal cavity.
  - C. Cholecystostomy with drainage of the biliary tract.
  - D. Cholecystostomy with drainage of the abdominal cavity.
  - E. Endoscopic retrograde drainage of the common bile duct.

19. Patient B., 49 years old, hospitalized 2 hours after a traffic accident with abdominal trauma and complaints of pain in the left half of it, weakness, dizziness. Research methods:

- A. Laparocentesis.
- B. Diagnostic observation.
- C. Laparostomy.
- D. Survey X-ray of the abdominal cavity.
- E. Ultrasound of the abdominal cavity.

20. Patient S., 46 years old, hospitalized with complaints of acute pain in the epigastrium, which appeared 3 hours ago, muscle tension in the upper abdomen. Symptoms of peritoneal irritation are weakly positive. Research methods:

- A. Survey X-ray of the abdominal cavity.
- B. Endoscopic examination of the stomach and duodenum.
- C. Ultrasound of the abdominal cavity.
- D. Exploratory laparotomy.
- E. Dynamic observation, laparocentesis.

21. A 30-year-old man complains of severe pain in the right half of the abdomen, nausea, vomiting, and general weakness. He fell ill 38 hours ago. On palpation, the abdomen is tense and sharply painful in the right half and right iliac region. Positive symptoms of Shchetkin-Blumberg, Voskresensky, and Razdolsky are determined. Blood pressure is 110/60 mmHg. Pulse is 98 beats per minute. Leukocytes are 12.4 t/l. Your tactics:

- A. Perform a traditional appendectomy.
- B. Perform a diagnostic laparoscopy.
- C. Laparoscopic appendectomy.
- D. Perform a lower-median laparotomy.
- E. Perform infusion therapy.

#### Literature:

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