MINISTRY OF HEALTH OF THE REPUBLIC OF BELARUS
EDUCATIONAL INSTITUTION
BELARUSIAN STATE MEDICAL UNIVERSITY
APPROVED

Rector of Belarusian State
Medical University

______________ A.V. Sikorski

_______________ 2019 г.

State Examination Program
for surgical diseases
for specialty 1-79 01 01 General Medicine
for students of medical faculty of international students

2019
Program approved by the Methodological Commission of Surgical disciplines of the Educational Institution “Belarusian State Medical University” 2019. (protocol N___)

Head of the Methodological Commission of Surgical disciplines
Associate Professor E.I. Youshko

Reviewed and approved at a meeting of the Board of Faculty of General Medicine of the Educational Institution “Belarusian State Medical University” 2019. (protocol N____)

Dean of Faculty of General Medicine
Professor A.I. Volotovski
EXPLANATORY NOTE

Section of Surgical Diseases in the training of medical doctors takes an important place as a doctor of any profile in their daily work meets patients with acute surgical pathology that require prompt diagnosis and emergency care. In addition, a number of medical specialties (gynecology, orthopedics and traumatology, ophthalmology, urology, ENT diseases, oncology) is impossible without the knowledge of the main sections of the course of surgical diseases, and without acquiring the skill of operational techniques and rules of performing the procedures.

The aim of the teaching of surgical diseases and related surgical disciplines in a complex training of medical doctor is studying the etiology, pathogenesis, clinical manifestations, diagnosis, differential diagnosis, treatment and prevention of major surgical diseases, the studying of indications and the general principles of conservative and surgical treatment, a certain amount of practical skills.

The objectives of teaching surgical diseases:
Students should know:
- principles of organization of surgical care in the Republic of Belarus;
- etiology, pathogenesis, clinical manifestations of major surgical diseases;
- diagnosis and differential diagnosis of surgical diseases, principles of diagnosis;
- complications of major surgical diseases;
- modern methods of treatment, indications;
- methods of prevention and rehabilitation of patients with the most common surgical diseases.

Students should be able to:
- use methods of physical, laboratory, functional and instrumental methods of examination;
- master the skills of the most common medical manipulations;
- maintain medical records;
- conduct community health education, evaluate disability.

The list of related subjects, with indication of sections (topics), learning which is necessary for students to study surgical diseases:
- normal anatomy: anatomy of organs and systems (blood supply, innervation), the study of surgical diseases which are provided by the program;
- normal physiology: basic physiological functions of the organs and systems of the human body;
- biological chemistry: biochemical parameters of the studied systems and states in health and disease;
- microbiology, virology, immunology: bacteriological and immunological methods of diagnosis of surgical infections, microbiological bases of chemotherapy and antiseptics;
- pathological physiology: basic pathophysiological processes underlying the development of the most frequent surgical diseases and injuries;
- radiologic diagnostics: X-ray semiotics of traumatic injuries and diseases of the chest and abdominal cavities;
topographical anatomy and operative surgery: topography of the great vessels and nerves, fascial and cellular spaces of the studied areas, topographic anatomy of the internal organs, the basics of operational techniques and principles of performance of basic surgical procedures;

pathology: morphological changes and characteristics of various surgical diseases;

propaedeutics of internal diseases: scheme of examination of patient and writing the history of the disease;

Pharmacology: drugs used in the treatment of surgical diseases, the principles of rational pharmacotherapy;

Public Health: analysis of morbidity, mortality; issues of medical statistics for the calculation of basic indicators of average and relative values, confidence limits and the difference of the results of the study, the calculation of morbidity of the population and employed, a graphical presentation of statistical data.

CONTENT OF TEACHING MATERIAL

1. GENERAL SURGERY

1.1 Introduction. History of surgery
The concept of surgery and surgical diseases.
The history of surgery, asepsis and antisepsis, pain control, haemotransfusion. Surgery and other medical disciplines.
The development of surgery and surgical care organization in the Republic of Belarus. The primary and specialized, emergency and elective medical care. Surgical care in the outpatient and inpatient settings. One-day surgery.
Importance, aim and objectives of “General surgery” discipline. Surgery training in the Republic of Belarus.
Deontology in surgery. Iatrogeny.

1.2. Desmurgy
The concept of bandages and dressings. Basic requirements to the dressing material. Types of dressings (the nature of the material used, purpose, fixing method of the dressing, bandages type, nature and purpose of immobilization).

1.3. Antiseptic and aseptic
Antiseptic. Types of modern antiseptics. Mechanical antiseptic: toilet and debridement of the wound. Modern methods of physical antisepsis: drainage of wounds and cavities, the use of tampons on the basis of carbon and other sorbents, the use of ultraviolet light, ultrasonic cavitation, medical lasers, vacuum wounds, hyperbaric oxygenation, aerotherapy. Photodynamic therapy: description, principle


The structure and organization of the surgical department, its layout, the basic premises and their design. Wards, dressing room, and their equipment. The operating unit, requirements for its placement, design and equipment (preoperative, operating room, sterilization, material, instrumental room, room for anesthesia services, endoscopic, etc.). Outpatient surgery design.

Cleansing of the operation and dressing rooms. The behavior of staff and visitors (students, doctors) in the operating room.


Prevention of implant infection. Contemporary suturing material, classification, requirements. Sterilization of alloplastic, xenoplastic transplants, non-biological materials in plastic surgery and traumatology.

1.4. Bleeding


Basic principles of acute blood loss management. Methods of temporary and final stop bleeding (mechanical, chemical, physical, biological). Methods for determining the volume of blood loss.

1.5. Basics of clinical transfusiology

Principles of water electrolyte balance, daily fluid requirements and losses, volumes of gastrointestinal tract liquids.


1.6. Mechanical injuries

Injuries. The concept of the industrial, agricultural, residential, street, sports, military injuries. Isolated injury, polytrauma (multiple, concomitant, the combined injury). The organization of trauma patient care.


Surgical sutures: classification, indications, technique, alternatives. Surgical knots: classification, types, technique.


Crush syndrome: clinical presentation, primary care, treatment guidelines.

1.7. Thermal damage and electric shock


**Electrical accident.** The mechanism of electric current action to body. Local and general presentation. Primary care and treatment.

### 1.8. Surgical examination

Special features of trauma and emergent & chronic surgical patients examination. Main steps of examination. Surgical diagnostics.

Diagnostic possibilities of contemporary laboratory and instrumental diagnostics: thermometry, lab tests, radiology, endoscopy. Biopsy: determination, nouns, indications, types.

Inpatient medical case record: common sections, requirements for complying. Inpatient medical case record as medical and legal document, rules for complying and storage.

### 1.9. Surgical operation. Preoperative and postoperative periods


**Surgical operation.** Types of surgical procedures. Steps of surgery. Indications and contraindications to surgery. Surgical team: staff, working objectives and tasks.


### 1.10. Surgical infection

Definition and classification of surgical infection.

**Acute purulent surgical infection.** Etiology and pathogenesis. Local tissue reaction. The general reaction. Systemic inflammatory response syndrome, manifestations. Basic principles the general and local treatment of acute purulent surgical infection according to stages.


Acute purulent bursitis and arthritis: etiology, clinical presentation, diagnosis, treatment.


1.11. Necrosis. Lymphatic outflow and circulatory disorders

Necrosis: nouns, causes of circulatory necroses, pathogenesis, types, clinical presentation.


Trophic ulcers: Causes, classification, clinical presentation, general principles of treatment.


2. SURGICAL DISEASES

2.1. Acute and chronic appendicitis
Acute appendicitis: definition, anatomy, etiology, pathogenesis, classification, syndromes, clinical presentation, diagnostics.
Differential diagnostics of acute appendicitis.
Particular features of acute appendicitis in children, aged people, pregnant women.
Peculiarities of clinical presentation in case of atypical localization of the appendix.
Complications of acute appendicitis: classification, clinical presentation, diagnostics and treatment of complications of acute appendicitis, their prevention.
Chronic appendicitis: classification, clinical presentation, diagnostics, principles of treatment, outcomes.

2.2. Acute pancreatitis

2.3. Chronic pancreatitis
Chronic pancreatitis: definition, classification, etiology, pathogenesis, clinical forms, diagnostics, differential diagnostics, treatment (conservative and surgical), outcomes. Cysts, fistulas of pancreas.

2.4. Gallstone diseases. Acute and chronic cholecystitis
Chronic cholecystitis: clinical presentation, diagnostics, treatment.
Concept of postcholecystectomy syndrome, classification, tactics. Mistakes and dangers of hepatobiliary surgery, their causes, prevention and ways of treatment of complications.

2.5. Acute intestinal obstruction
Definition, classification, etiology, pathogenesis. Clinical presentation and diagnostics, differential diagnostics of different types of intestinal obstruction. Methods of examination of patients with different types of intestinal obstruction.
Modern principles of treatment of patients with intestinal obstruction, outcomes, prevention.

2.6. Complications of the gastroduodenal ulcers
Perforated ulcer: clinical presentation, diagnostics, treatment.
Atypical perforation of gastric and duodenal ulcers: peculiarities of clinical presentation, diagnostics, treatment.
Bleeding gastroduodenal ulcer: clinical presentation, diagnostics, principles of conservative treatment, methods of endoscopic hemostasis, indications for surgical treatment, types of operations.
Mallory-Weiss syndrome: etiology, clinical manifestations, diagnosis, treatment, surgical tactics.
Gastric outlet obstruction of ulcer etiology: pathogenesis clinical presentation, diagnostics, principles of conservative and surgical treatment.
Penetrating and intractable ulcer: clinical presentation, diagnostics, treatment.

Indications for gastrectomy and organ-preserving operations in gastric and duodenal ulcers.

Clinical presentation, diagnostics and treatment of symptomatic ulcers (hormonal ulcers, Zollinger-Ellison syndrome, medicinal ulcers).


2.7. Blunt abdominal trauma
Blunt abdominal trauma: definition, classification, mechanisms of abdominal traumas.
Closed injuries of spleen: clinical presentation, diagnostics, surgical tactics.

2.8. Blunt chest trauma
Rib fractures: clinical presentation, diagnostics, treatment.
Pneumothorax: causes, classification, clinical presentation, diagnostics and surgical tactics.
Hemothorax: causes, classification, clinical presentation, diagnostics and surgical tactics.

2.9. Peritonitis
Modern principles of treatment of patients with peritonitis. Efferent methods of treatment of patients with peritonitis.

2.10. Hernias, complications of abdominal hernias
Definitions, anatomy, causes, pathogenesis, classification. Clinical presentation, diagnostics and treatment of uncomplicated hernias.
Incarcerated hernia: definition, clinical presentation, diagnostics, treatment.
White (Hunter’s) line hernias: anatomical data, classification, clinical presentation, diagnostics, methods of operations.


Tactics of surgeon in case of doubtful strangulation, spontaneous or forced reposition)

2.11. Focal liver lesions

Liver cysts and abscesses: etiology, clinical presentation, diagnostics, treatment.

2.12. Surgical treatment of parasitic diseases

2.13. Suppurative Diseases of the Lungs and Pleura
Semiotics, clinical manifestation, special methods of investigation, diagnostics of the suppurative diseases. Treatment of abscess, gangrene, pyopneumothorax, bronchiectasis, chronic pneumonia, suppurated cyst, pleural empyema. Indications for surgery, type of operations.

Acute and Chronic Mediastinitis: classification of mediastinitis. Treatment principles for mediastinitis of different etiology. Mediastinal drainage rules and types.

2.14. Varicose disease


Trophic calf ulcer: etiology and pathogenesis, clinical manifestation, differential diagnosis, treatment.

2.15. Portal Hypertension


Complications of portal hypertension, their diagnosis and therapy. Emergent measures for bleeding from esophageal varicose veins.

2.16. Diabetes Mellitus in Surgery


2.17. Management and diagnostics features in acute surgical diseases in ambulatory conditions

Diagnostic abilities in ambulatory conditions. Features of management in acute surgical diseases in ambulatory conditions (at home, in polyclinic, in admission department).

2.18. Surgery of arteries diseases

Aneurysms of the aorta and peripheral arteries. Etiology, pathogenesis, clinical manifestations, diagnostics, treatment.

Acute insufficiency of peripheral blood supply: thrombosis and embolism of peripheral arteries at different sites. Acute arterial obstruction syndrome. Clinical manifestations, diagnostics, grades of ischemia, principles of treatment.


Arteriosclerosis obliterans, endarteritis obliterans: etiology, pathogenesis, clinical manifestations, diagnostics, differential diagnosis, principles of medical and surgical treatment of patients with low extremities occlusive diseases.

Raynaud's syndrome: Clinical manifestations and diagnosis, treatment.

2.19. Organs and tissues transplantation

Definitions of: different types of transplantation, donor, recipient. Main innovations laying in basis of organs and tissues transplantation development. Ethical, legal, immunological aspects of transplantation.

2.20. Surgical diseases of small intestine and colon
Crohn’s disease: classification, clinical manifestations, diagnostics, complications, indications for surgical treatment, types of operations.
Acute and chronic mesenteric ischemia: clinical manifestations, diagnostics, treatment.
Large bowel fistula: classification, clinical manifestations, diagnostics, treatment.
Foreign bodies of alimentary tract. Clinical manifestations, diagnostics, management.
Meckel's diverticulum: clinical importance.

2.21. Diseases of the rectum

2.22. Diseases of the esophagus and diaphragm
Classification, pathogenesis, clinical manifestations, diagnostics and treatment of functional diseases, foreign bodies, injuries and tumors of the esophagus.
Chemical burn of esophagus: clinical manifestations, diagnostics, first aid.
Esophageal stricture: clinical manifestations, diagnostics, treatment.
Spontaneous esophageal rupture: clinical manifestations, diagnostics, treatment.

3. Traumatology and Orthopaedics.

3.1. General traumatology.
Development of traumatology and orthopedics in the Republic of Belarus. Organizational basis of trauma care.

3.1.1. Regeneration of bone tissue in normal and pathological conditions.
Regeneration of bone tissue. Physiological and reparative regeneration. The stages of bone callus formation and its types. Primary and secondary healing of the bone.


3.1.2. Multiple and combined injuries.
Definition of the "polytrauma"; multiple, combined, associated injuries, their characteristics. Clinical features of polytrauma (syndrome of mutual burdening, incompatibility of therapy, acute complications of injuries - shock, massive blood loss, toxemia, acute renal failure, fat embolism, thromboembolism, etc.).

Emergency medical care at the prehospital stage of treatment: ways to identify life-threatening conditions, methods for their elimination in patients with trauma of the musculoskeletal system; determining the severity of injury; detection of dominant injury.


Diagnosis, prevention and treatment of complications of injuries of the musculoskeletal system.

Features of the rehabilitation period in patients with polytrauma. Social, professional rehabilitation of patients who survived multiple, combined and associated injuries of the musculoskeletal system.

3.1.3. Open fractures.


3.1.4. Local and general complications in trauma.
Classification of complications. Local complications: secondarily open fractures, damage to the main vessels and nerves, acute compartment syndrome, blisters. Prevention, diagnostics, the aid on pre-and hospital stages of treatment.


3.1.5. Rehabilitation of orthopedic and traumatological patients.
Definition of the "rehabilitation". Basic principles of rehabilitation. Sections included in the content of rehabilitation. Goals of rehabilitation. Types of rehabilitation (medical, social or household and professional). Methods of rehabilitation of patients.

3.2. Local Traumatology.

3.2.1. Features of examination of patients with injuries and diseases of the musculoskeletal system.
Types of positions of patients with pathology of the musculoskeletal system. Methods of determining the axis of the limb and spine. The main types of deformations of the axis of the limb and spine. Methods of palpation and percussion. Methods of determining the range of motions in the joints. Methods for measuring the length and circumference of the limbs. Types of limb shortening, ways to determine them. Deformations of the spine (scoliotic deformity, kyphosis, lordosis). Disorders of the gait (lameness, its types).

Absolute and relative clinical signs of fractures, dislocations. Types of displacement of bone fragments and methods for their determination. Reliable and probable signs of diseases of the joints and spine.

Special diagnostic methods in traumatology and orthopedics. Indications for their use. Methodology. Interpretation of received data. X-ray signs of fractures, dislocations and the most common orthopedic diseases.

3.2.2 Fractures of the clavicle and humerus.
Classification of injuries of the proximal metapophysis of the humerus.

3.2.3 Injuries of the elbow and forearm.
Fractures of the olecranon: the mechanism of injury, diagnosis, methods of conservative and surgical treatment, indications for their use, timing of consolidation.

Fractures of the coronoid process of the ulna: diagnosis, treatment.


Fracture of the radius in a typical place (Colles and Smith fractures): the mechanism of injury, clinical signs, diagnosis, treatment. Timing of fusion and recovery of work capacity.

3.2.4. Injuries of the hand, complications, prevention and treatment.

Frequency of hand injuries, their structure. The medical and special importance of the hand injuries. Classification of hand injuries. Clinical manifestations, diagnosis and treatment of closed injuries.


Injuries of the extensor’s tendons of the fingers. Clinical manifestations, diagnostics. Conservative and operative treatment of extensor fingers.


Fractures of metacarpal bones and phalanges of fingers: diagnostics, treatment.

3.2.5. Injuries of the pelvis.


3.2.6. Injuries of the spine.


body fractures. Features of outpatient treatment of patients with uncomplicated vertebral fractures.


3.2.7 Femur fractures.
Trochanteric fractures of the femur: the mechanism of injury, clinical manifestations, diagnosis, treatment methods.

3.2.8. Injuries of the knee, shin and foot.

3.2.9. Traumatic dislocations.
Pronational subluxation of the head of the radius. The mechanism of injury. Clinical manifestations. Treatment.

3.3. Orthopaedics

3.3.1. Congenital hip dislocation.
in newborns and children. Radiographic semiotics of different degrees of hip dysplasia.


3.3.2. Congenital clubfoot.

3.3.3. Congenital muscular torticollis.

3.3.4. Osteoarthriti.
Etiology and pathogenesis of secondary osteoarthritis. Features of biomechanics of the hip and knee joints in norm and in osteoarthritis. Classification depending on the etiology and stage of the disease.


3.3.5. Disorders of posture. Scoliotic disease.
Definition of the concept of "posture." Types of its violation. Diagnosis and prevention of postural disorders.


3.3.6. Bone tumors.

Additional methods of examination in the diagnosis of bone tumors (X-ray, clinical laboratory, computer and magnetic resonance imaging).

Treatment of bone tumors. Medical and social rehabilitation of patients.
3.3.7. Osteochondropathy.

3.3.8. Static foot deformities.


4. ONCOLOGY

4.1. Organization of oncological care.

4.2. Skin tumors
Classification of skin tumors.

4.3. Thyroid cancer
Differential diagnosis of a thyroid cancer with benign diseases. Medical tactics in nodal pathology of a thyroid cancer.

4.4. Breast cancer and benign diseases of mammary gland


4.5. The tumors of the esophagus, stomach


4.6. Colorectal cancer


4.7. Lung cancer and mediastinum tumors


Diagnostics and differential diagnosis of mediastinum tumors Principles of treatment of mediastinum tumors
4.8. Renal carcinoma and retroperitoneal tumors

4.9. Lymphomas

4.10. Liver (primary and metastatic) and pancreatic tumors

5. QUESTIONS OF ADJACENT DISCIPLINES

5.1. ANESTHESIOLOGY AND REANIMATOLOGY

5.1.1. Types of modern Anesthesia.
Types of modern General Anesthesia (GA). Stages and clinical signs of GA. Types of modern inhalation and noninhalation anesthetics.

5.1.2. Preparation for anesthesia.
Preoperative patients’ physical status assessment. Anesthetic technique choice. The objectives of premedication. Drugs for premedication.

5.1.3. Methods of the patient's monitoring applied in anesthesiology and intensive care.
Methods of the patient's condition objective control, applied in anesthesiology and intensive care.
5.1.4. Resuscitation and intensive care in the early postoperative period
The basic forms of acid-base balance disorders, pathophysiology. Clinical manifestations, correction principles.

The main types of water and electrolyte balance disorders, pathophysiology. Clinical signs, intensive therapy.

5.1.5. Terminal conditions. Cardio-pulmonary resuscitation (CPR)

5.1.6. Intensive therapy of Acute Circulatory Disorders

5.1.7. Intensive therapy of Acute Respiratory Failure (ARF)

5.1.8. Sepsis

5.1.9. Acute poisoning
General principles of acute poisoning treatment. Specific features of various acute poisoning treatment.

5.2. UROLOGY
5.2.2. Chronic renal failure (CRF): aetiopathogenesis, stages, treatment methods.
5.2.3. Acute urinary retention. Causes, investigations, First aid algorithm (initial management algorithm).
5.2.4. Macrohematuria (Gross hematuria). Types, Causes (aetiology), Topical and differential diagnosis. Physician’s (Doctor’s) tactics during hematuria.

5.2.5. Renal colic: Aetiology, pathogenesis, investigations, differential diagnosis. Algorithm for the management of renal colics.


5.2.7. Chronic pyelonephritis. Classification. Causes, clinical presentations, Investigations, treatment, prophylaxis (prevention) of relapses.


5.2.10. Acute epididymoorchitis: clinical presentations, investigations (diagnosis), management (treatment).

5.2.11. Prostatitis: classifications, symptoms, investigations (diagnosis), treatment.

5.2.12 Urinary tract stones (urinary calculi, Urolithiasis), aetiology, pathogenesis. Theories of stone formation. Risk factors or mechanism of stone formation. Investigations (diagnosis).


5.2.16. Testicular and scrotal injury (trauma), mechanism of trauma, methods of investigation, initial management, features of surgical managements.


5.2.27. Imaging (X-Ray) studies in urology. Principles of patients preparations for various imaging (X-Ray) studies in urology. Types of imaging (X-Ray) studies methods, principles of implementation. Radiocontrast agents used in urology.

5.2.28. Radioisotope and ultrasound methods of investigations used in urology. Their diagnostic relevance.


5.2.30. Qualitative and quantitative changes in urine and their diagnostic relevance in urological disease.

5.3. NEUROSURGICAL DISEASES

5.3.1. Classification of traumatic brain injury.
5.3.4. Fractures of the roof and base of the skull. Clinic, diagnostics, treatment.
5.3.5. Severe traumatic brain injury. Clinic, diagnostics, principles of treatment.
5.3.8. Diffuse axonal injury: the biomechanics of injury, pathogenesis, clinical manifestations, diagnosis, treatment principles.
5.3.9. Depressed fractures of the cranial vault: clinic, treatment principles.
5.3.10. Epidural hematoma (stage, clinical picture, diagnosis, treatment).
5.3.11. Subdural hematoma (stage, clinical picture, diagnosis, treatment).
5.3.13. Traumatic and spontaneous intracerebral hematoma: clinical, surgical treatment principles.
5.3.16. Classification of brain tumors.
5.3.18. Pituitary adenomas: clinical features, diagnosis, surgical treatment principles.
5.3.20. Arterial (saccular) aneurysm of the brain. Periods, clinical picture, diagnosis, treatment principles.

Head of the 1st department of surgery, professor G.G. Kondratenko
Head of the 2nd department of surgery, professor S.I. Tratsyak

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