МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
Харківський національний медичний університет

DISEASES OF THE RESPIRATORY SYSTEM, GASTROINTESTINAL TRACT, LIVER, GALLBLADDER, PANCREAS AND ENDOCRINE GLANDS

Manual for practical classes in pathomorphology for English-speaking medical students

ХВОРОБИ БРОНХО-ЛЕГЕНЕВОЇ СИСТЕМИ, СИСТЕМИ ТРАВЛЕННЯ, ПЕЧІНКИ, ЖОВЧНОГО МІХУРА, ПІДШЛУНКОВОЇ ТА ЕНДОКРИННИХ ЗАЛОЗ

Методичні вказівки до занять з патоморфології для студентів медичних вузів з англійською мовою навчання

Затверджено
вченою радою ХНМУ.
Протокол № 6 від 26.05.2016.

Харків
ХНМУ
2016

Diseases of the respiratory system, gastrointestinal tract, liver, gallbladder, pancreas and endocrine glands : manual for practical classes in pathomorphology for English-speaking medical students / comp. I. V. Sorokina, V. D. Markovskiy, I. V. Korneyko et al. – Kharkov : KNMU, 2016. – 20 p.

Compilers I. V. Sorokina
V. D. Markovskiy
I. V. Korneyko
G. I. Gubina-Vakulik
V. V. Gargin
O. N. Pliten
M. S. Myroshnychenko
S. N. Potapov
T. V. Bocharova
D. I. Galata
O. V. Kaluzhina

Хвороби бронхо-легеневої системи, системи травлення, печінки, жовчного міхура, підшлункової та ендокринних залоз: метод. вказ. до занять з патоморфології для студентів медичних вузів з англійською мовою навчання / упоряд. І.В. Сорокіна, В.Д. Марковський, І.В. Корнейко та ін. – Харків : ХНМУ, 2016. – 20 с.

Упорядники І. В. Сорокіна
В. Д. Марковський
І. В. Корнейко
Г. І. Губіна-Вакулик
В. В. Гаргін
О. М. Плітень
М. С. Мирошниченко
С. М. Потапов
Т. В. Бочарова
Д. І. Галата
О. В. Калужина

Foreword

Pathomorphology, one of the most important medical subjects is aimed at teaching students understanding material basis and mechanisms of the development of main pathological processes and diseases.

This manual published as separate booklets is devoted to general pathological processes as well as separate nosological forms. It is intended to the English-medium students of the medical and dentistry faculties. It can be used as additional material used both for home and individual work in class. It can also be used to master the relevant terminology and its unified teaching.

The manual is based on the syllabuses in Pathomorphology for Medical Students (2015).

For a practical class of 2 hour duration the following time calculation is recommended:

1. Determining the primary level of the knowledge – 5 min.
2. Independent work of the students – 50 min.
3. Determining the final level of the knowledge – 20 min.
4. Checking the protocols of the practical class and attestation of the students – 15 min.

The suggested Manual allows to organize the teaching process in the proper way.

References:

1. Патоморфологія : нац. підручник / В.Д. Марковський, В.О. Туманський, І.В. Сорокіна та ін. ; за ред. В.Д. Марковського, В.О. Туманського. – Київ : ВСВ «Медицина», 2015. – 936 с.

2. Струков А.И. Патологическая анатомия / А.И. Струков, В.В. Серов. – Москва : Медицина, 1993. – 687 с.

3. Anderson's Pathology // Edited by John M. Kissane. The C.V. Mosby Company. – Toronto – Philadelphia, 1990. – 2196 p.

4. Thomas C. Macropathology / C. Thomas. – Toronto – Philadelphia : B.C. Decker Inc., 1990. – 355 p.

5. Thomas C. Histopathology / C. Thomas. – Toronto – Philadelphia : C. Decker Inc., 1989. – 386 p.

Lesson

Subject: Diseases of the respiratory system

Validation of the subject: the knowledge of respiratory system pathology is necessary to make the diagnosis of acute pneumonias and chronic nonspecific diseases of the lungs in the practical work of the doctor. It is necessary to emphasize that in childhood and elderly age focal pneumonias are independent diseases.

Objectives of the lesson: to study the etiology, pathogenesis and morphological changes in respiratory organs in acute inflammatory processes, chronic diseases and lung cancer, as well as in their complications.

Visual aids

Annotated tables:

- croupous pneumonia - stages of development, complications;
- the forms of bronchopneumonia;
- clinico-anatomical aspect of pneumonias in children;
- clinico-anatomical forms of chronic pneumonias;
- clinico-anatomical classification of lung cancer.

Macrospecimens:

- croupous pneumonia at the stage of grey hepatization;
- bronchopneumonia (hypostatic, peribronchial);
- chronic bronchitis with bronchiectasias and pneumosclerosis;
- bronchogenic cancer;
- cor pulmonale.

Microspecimens:

- # 90 – croupous pneumonia at the stage of grey hepatization (stained with hematoxylin and eosin; according to Shieninov for fibrin);
- # 89 – focal pneumonia (stained with hematoxylin and eosin);
- # 22 – emphysema of the lung (stained with hematoxylin and eosin);
- # 202 – carnification of the lung (stained according to van-Gieson).

Slides:

- croupous pneumonia at the stage of grey hepatization;
- focal bronchopneumonia;
- carnification of the lung;
- emphysema of the lung.

Electronic micrographs

- pneumonia;
- stage of inflow;
- obstructive emphysema of the lung.

Questions to control basic knowledge:

1. What synonyms of a croupous pneumonia do you know?

a), b), c), d), e),

A. Lobar. *D. Pleuropneumonia.*
B. Focal. *E Bronchopneumonia. .*
C. Fibrinous. *F. Purulent.*

2. What etiological causes of bronchopneumonia are most frequent?

A. Pneumococcus. *D. Streptococcus.* *G. Pathogenic fungi.*
B. Friedlender's diplobacilus. *E. E. coli.*
C. Staphylococcus. *F. Viruses.*

3. Which diseases belong to the group of chronic nonspecific diseases of the lungs?

A. Focal pneumonia. *E. Lung cancer.* *H. Chronic abscess.*
B. Chronic bronchitis. *F. Emphysema of the lung.*
C. Bronchiectasias. *G. Pneumofibrosis and pneumocirrhosis*
D. Croupous pneumonia. *I. Gangrene of the lung.*

4. Which acute destructive processes in the lungs do you know?

A. Pneumonia. *B. Abscess.* *C. Gangrene.*

Answers: I (a, c, d); 2 (a, c, d, e, f, g); 3 (b, c, f, g, h); 4 (b, c).

Stages of individual work in class:

Study and describe macrospecimens

1. Croupous pneumonia at the stage of grey hepatization.

Describe the lung: a) consistence, b) air content, c) appearance on incision, d) prevalence of process, changes of the pleura. Name synonyms, list stages of the disease course, complications.

2. Bronchopneumonia.

Describe the appearance of the lung: localization of the centers, their sizes, consistence. Name the causative factors. The forms of bronchopneumonia related to the age. List complications. What are the differences between croupous pneumonia and focal pneumonia?

3. Chronic bronchitis with bronchiectasias and pneumosclerosis.

Describe the kind of a bronchiectasias wall, the colour, tissue of the lung on incision, consistence. Give the definition of bronchiectasias. Name the kinds of bronchiectasias according to the etiology. List their complications.

4. Bronchogenic cancer

Describe the character of the tumour growth , its colour, density. Name its macroscopic form. What are the causes of death in the patients with lung cancer?

5. Cor pulmonale.

Describe the sizes of the heart, the thickness of the wall of the right and left ventricles, the condition of trabecular and papillary muscles. The causes of development of cor pulmonale

Study the slides on the electrified stand:

- croupous pneumonia at the stage of grey hepatization
- focal bronchopneumonia
- emphysema of the lungs.

Study, describe and draw microspecimens:

90 – croupous pneumonia at the stage of grey hepatization (stained with hematoxylin and eosin)

Describe the character of exudate, blood filling of the vessels of interalveolar septa. What are the etiological factors, stages of the process, pulmonary and non- pulmonary complications?

 # 89 – focal pneumonia (stained with hematoxylin and eosin)

Describe the condition of bronchi, the character of exudate blood filling of the interalveolar septa. What are the etiological factors of the disease and its complications?

Study the electronograms:

- obstructive emphysema of the lungs, intracapillary sclerosis
- obstructive emphysema of the lungs, pneumosclerosis.

Krok questions:

1. An autopsy of a male, who suffered from right-sided pneumonia, revealed in the right lung some cavity, 3.5 cm in diameter, that had uneven edges, communicated with the bronchus and was filled with some purulent exudate. Microscopically, the wall of the cavity was formed by the granulation tissue diffusely infiltrated by leukocytes. Which of the diagnoses, listed below, was the most probable?

A. Acute pneumogenic abscess.
*B. Acute bronchiogenic abscess.**
C. Chronic bronchiogenic abscess.
D. Chronic pneumogenic abscess.
E. Pulmonary echinococcosis.

2. A 50 year-old patient has died because of pulmonary- cardiac insufficiency. In autopsy the pathologist has found out: the upper lobe of the right lung has been red and dense as a liver, white fibrin has been found out on pleura. Microscopic investigation: exudate consists of fibrin, a lot of erythrocytes and a few leukocytes. Call the disease and its stage.

*A. Red hepatization, croupous pneumonia.**
B. Grey hepatization, croupous pneumonia.
C. Interstitial pneumonia initial stage.
D. Gangrene, initial stage.
E. Bronchoectatic disease, last stage.

3. The autopsy has revealed destructive bronchiectasis accompanied by chronic abscesses in the lungs. The kidneys are dense with sebaceous surface on incision. Besides «cor villosum», fibrinous coloenteritis, fibrinous pneumonia are found. Name the basic disease, its complications, and causes of death.

*A. Bronchoectatic disease, secondary amyloidosis, uremia.**
B. Croupouse pneumonia, empyema of pleura, intoxication.
C. Pneumococcal pneumonia, abscess of the lung, sepsis.
D. Hypertensive disease, primary shrinkage kidney, chronic renal insufficiency.
E. Transmural myocardial infarction, fibrinous pericarditis, acute cardiac insaficiency.

Questions to control the knowledge:

1. What common diseases of the respiratory system do you know?
2. Croupous pneumonia: etiology and pathogenesis, stages of development; complications (pulmonary, non-pulmonary, atypical forms).
3. Name acute destructive processes in the lungs. What is abscess, gangrene of the lung?
4. What pathological processes are called chronic nonspecific lung diseases?
5. What changes develop in the lungs in bronchiectasias?
6. Concept of "bronchoectatic disease". What are as complications?
7. Are pneumosclerosis and pneumocirrhosis independent diseases or unfavorable outcome of other diseases of the lungs?
8. Concept of emphysema of the lungs. What are the forms of emphysema?
9. Precancerous conditions of the lungs?
10. Name clinico-anatomical classification of lung cancer:
    A. According to the localization.
    B. According to the character of growth.
    C. According to the microscopic picture.
    D. According to the character of complications.

Terminology

Croupous pneumonia, abscess, gangrene, pneumonitis, pleuritis, bronchiectasias, pneumofibrosis, emphysema, fibrous alveolitis, spontaneous pheumothorax, bullous emphysema, intracapillary sclerosis, pneumocirrhosis, chronic bronchitis, chronic pneumonia, bronchopneumonia, stage of inflow, stage of red hepatization, stage of grey hepatization.

Practical habits and skills:

It is necessary to be able to diagnose croupous pneumonia and focal pneumonia according to the appearance of the macrospecimen, to establish interrelation between chronic nonspecific lung diseases and cor pulmonale and to explain the pathogenesis of the revealed changes. To define the ways of metastatic involvement in lung cancer and to name the organs in which metastases are common.

Revise the word-building elements

pneumo – lungs, air
pneumono – lungs, air
broncho – bronchial tube
bronchio – bronchial tube
bronchiolo – small bronchus
lobo-lobe of the lung
pectoro – chest
pleuro – pleura

spiro – breathe
conio – dust
anthraco – coal dust
alveolo – alveolus, air sac
oxo – oxigen
– ptysis – spitting
– pnea – breathing
– thorax – chest
em – in

Lesson

Subject: Diseases of the gastrointestinal tract

Validation of the subject: the knowledge of morphological changes in the gastrointestinal tract is necessary for mastering clinical sections of the pathology of digestive organs; it is necessary for correct clinico-anatomical interpretation of the results of morphological study of biopsies, surgical material and results of sectional observations.

Objectives of the lesson: to study the etiology, pathogenesis, classification, morphological changes in the basic forms, complications of acute and chronic gastritis, peptic ulcer of the stomach and duodenum, appendicitis and basic diseases of the intestine.

Visual aids

Annotated tables:

- classifications of acute and chronic gastritis;
- complications of ulcerous disease;
- acute and chronic appendicitis.

Coloured table:

- diagram – chronic ulcer of the stomach.

Slides:

- hemorrhagic erosion of the stomach;
- acute ulcer of the stomach;
- chronic ulcer of the stomach at the stage of exacerbation;
- acute phlegmonous appendicitis.

Electronic micrographs:

- chronic atrophic gastritis.

Macrospecimens:

- chronic atrophic gastritis;
- polypous gastritis;
- phlegmon of the stomach;
- erosive gastritis;

- chronic ulcer of the stomach;
- chronic ulcer of the stomach with penetration of the pancreas;
- phlegmonous appendicitis;
- chronic ulcer of the stomach with arrosion of the vessel.

Microspecimens:

- *# 207* – chronic ulcer of the stomach;
- *# 208* – aute phlegmonous-ulcerous appendicitis.

Questions to control basic knowledge:

1. Can tonsillitis promote development of the rheumatic disease?
2. List the forms of acute gastritis depending on morphological changes in the mucosa of the stomach:

A. Catarrhal. *D. Fibrinous.*
B. Atrophic. *E. Purulent (phlegmonous).*
C. Hypertrophic. *F. Corrosive.*

3. Choose three basic stages (forms) of the morphogenesis of ulcerous disease:

A. Erosion. *D. Perforation.*
B. Penetration. *E. Chronic ulcer.*
C. Acute ulcer. *F. Malignancy.*

4. Name the forms of acute exudative peritonitis:

A. Serous. *D. Purulent.*
B. Polypous. *E. Granulomatous.*
C. Fibrinous.

5. Divide the forms of acute appendicitis on destructive (I) and undestructive (II):

A. Common. *D. Apostematous.*
B. Purulent (phlegmonous). *E. Phlegmonous ulcerative.*
C. Superficial. *F. Gangrenous.*

Answers: 1 – yes; 2 (a, d, e, f); 3 (a, c, e); 4 (a, c, d), 5 (I – b, d, e, f; II – a, c).

Stages of individual work in class:

Study and describe macrospecimens:

1. Chronic atrophic gastritis.

Characterize the condition of the stomach mucosa (rugae, thickness). Are the specified changes of the mucosa combined with disturbances of secretion? Specify possible histological changes in the mucosa.

2. Chronic ulcer of the stomach.

Specify localization, sizes and form of ulcerative defect, characterize the depth of the ulcer, its bed and edges. Describe what edge is inverted to the esophagus, and what edge to pylorus. Name possible ulcerous-destructive complications of chronic ulcer of the stomach.

3. Chronic ulcer of the stomach penetrating the pancreas.

Define localization, sizes and depth of ulcerative defect, the appearance of the bed of the ulcer and underplaying organ. Explain what penetration is and why there is no defect in the stomach?

4. Chronic ulcer of the stomach with arrosion of the vessel.

Give the macroscopic description of ulcerative defect, specify its localization, form, depth. Describe the edges of the ulcer, its bed and condition of the vessel. Explain the mechanism of the bleeding. What are clinical symptoms of gastric bleeding?

5. Acute phlegmonous appendicitis.

Describe the changes of the appendix: its diameter, condition of serous coat and vessels, contents of the lumen and thickness of the wall. Name possible complications of the described form of appendicitis.

6. Empyema of the appendix.

Appearance of the process, the sizes of the lumen (cavity and thickness of the wall). What exudate is present in the lumen? To what form of appendicitis does this case belong according to the course of the disease?

Study, describe and draw microspecimens:

 # 207 – chronic ulcer of the stomach (stained with hematoxylin and eosin).

Describe the shape of ulcerative defect and the condition of its edges, define the depth of the defect in relation to the layers of the stomach wall. List consequently the layers of the ulcer bed, describe the condition of the vessels and nerves of the bed of the ulcer. Do the changes in the ulcer correspond to the stage of exacerbation of the disease? Name possible complications connected with the destruction in the ulcer.

 # 208 – acute phlegmonous ulcerative appendicitis (stained with hematoxylin and eosin).

Describe the thickness of the wall, the exudate and its character. Is there diffusion of the exudate to the wall of the process and to the peritoneum, covering the process and its mesentery? Specify possible complications of the disease.

Krok questions:

1. A room for dissections received surgically removed tonsils; they were pink-grey, dense in consistency and had superficial erosions. A microscopic examination revealed sclerosis of the capsule and tissues of the tonsils, foci of ulceration in the epithelium. The lymphoid tissue of the tonsils was characterized by hyperplasia and large reactive centres in the follicles. Which of the diagnoses listed below was the most probable?

A. Catarrhal tonsillitis.
B. Phlegmonous tonsillitis.
C. Purulent tonsillitis.
*D. Chronic tonsillitis.**
E. Ulceronecrotic tonsillitis.

2. On fibrogastroscopy, some defect was found in the gastric mucosa; it was 3 cm in diameter, had a dense bottom and edges. A microscopic examination revealed a gastric ulcer, whose bottom was covered with some fibrinous-purulent exudate, under which there were successive layers of fibrinoid necrosis, granulation and

rough-fibrous connective tissues. The connective tissue had scleroid vessels and hypertrophied nerves. Which of the diagnoses listed below was the most probable?

A. Acute gastric ulcer. *D. Chronic ulcer at the stage of exacerbation.**
B. Acute ulcer with penetration. *E. Chronic ulcer at the stage of remission.*
C. Perforating ulcer.

3. The removed appendix measures: 9 cm long, 0,9 cm wide. Serosa is dull, hyperemic. Microscopy has revealed swollen walls, stases in the capillaries and venules, small hemorrhages. In the mucous and submucous membranes, there are foci of necrosis with leukocytic infiltration around it. What diagnosis is most probable?

*A. Acute phlegmonous ulcerative appendicitis.**
B. Acute phlegmonous appendicitis.
C. Acute simple appendicitis.
D. Acute gangrenous appendicitis.
E. Acute apostematous appendicitis.

Questions to control the knowledge:

1. Etiology, pathogenesis, morphological characteristic and outcome of acute and chronic gastritis.
2. Etiology, pathogenesis, morphological changes, complications and outcomes of appendicitis, ulcerous disease of the stomach and duodenum.
3. Etiology and pathogenesis of basic diseases of the intestine.

Terminology

Angina, tonsillitis, esophagitis, gastrobiopsy, gastritis, peptic ulcer, erosion of the stomach, acute ulcer of the stomach, chronic ulcer of the stomach, erosive bleeding, perforation, peritonitis, hidden perforation, penetration, chlorine-hydropenic uremia, malignancy, enteritis, colitis, jejunitis, ileitis, enteropathy, intestinal fermentopathy, syndrome of disturbed adsorption, nonspecific ulcerative colitis, Kron's disease, appendicitis, mucocele, myxoglobulosis of the process.

Practical habits and skills

The students are to be able to explain classification and to characterize morphology of the basic forms of gastritis; to be able to characterize morphology of ulcerous disease of the stomach and duodenum according to the stage and to list complications; to classify and to characterize morphology of various forms of appendicitis, to list complications. To carry out clinico-anatomical interpreting biopsy researches and sectional observations.

Revise the word-building elements

gastro – stomach
esophago – esophagus
celio – abdomen

entero – small intestine
duodeno – duodenum
jejuno – jejunum
ileo – ileum
colo – colon
appendo – appendix
appendico – appendix
hernio – hernia
-osis – disease
-itis – inflammation

Lesson

Subject: Diseases of the liver, gallbladder and pancreas

Validation of the subject: the knowledge of the material is necessary to study surgical and internal diseases of the liver to form clinicoanatomical thinking of the future doctor, as well as to be able to make differential diagnosis of diseases and clinicoanatomical analysis. It is necessary to pay attention to the opportunity of liver cirrhosis development as an outcome of Botkin's disease and hepatocholecystitis, biliary cirrhosis in atresia of the bile ducts.

Objectives of the lesson: on the basis of the modern classifications of liver, pancreas and gallbladder diseases, to study the etiology, pathogenesis, morphogenesis of the diseases at different stages of their development; structural basis of convalescence, complications, outcomes and long-term consequences of the above diseases.

Visual aids

Annotated tables:

- Mexican classification of cirrhosis of the liver;
- kinds of liver diseases: hepatitis and hepatosis;
- clinico-morphological forms and pathogenesis of viral hepatitis;
- acute pancreatitis;
- classification of pancreatitis according to V.G. Boyko.

Macrospecimens:

- toxic degeneration of the liver;
- portal cirrhosis of the liver with splenomegaly;
- cardiac (nutmeg) cirrhosis of the liver;
- biliary cirrhosis of the liver in the adult;
- biliary cirrhosis of the liver in atresia of the bile ducts in children;
- large-node cirrhosis of the liver;
- pigment cirrhosis of the pancreas in hemochromatosis;
- varicose phlebectasia of the esophagus;

- primary cancer of the liver against the background of cirrhosis (multiple-node form);
- metastatic cancer of the liver;
- chronic calculous cholecystitis;
- edema of the gallbladder;
- hemorrhagic pancreatitis.

Slides:

- small-node cirrhosis of the liver;
- toxic degeneration of the liver;
- biliary cirrhosis of the liver.

Microspecimens:

- *# 213* – toxic degeneration of the liver;
- *# 212* – biliary cirrhosis of the liver;
- *# 96* – small-node cirrhosis of the liver.

Electronic micrographs:

- Acute alcoholic hepatitis (Mallory's corpuscles).

Questions to control basic knowledge:

1. Can postnecrotic cirrhosis of the liver develop in general vein congestion?
2. Name the complications of acute cholecystitis:
   A. Obliteration of hepatic duct.
   B. Empyema of the gallbladder.
   C. Phlebosclerosis of the portal system.
   D. Purulent cholangitis.
   E. Pericholecystitis.
3. Name microscopic features of acute alcoholic hepatitis:
   A. Necrosis of hepatocytes.
   B. Occurrence of regeneration adenomas.
   C. Infiltration of portal system by neutrophils of.
   D. Presence of Mallory's corpuscles in cytoplasm of hepatocytes.
   E. Presence of Kauysilmen's corpuscles.
4. Name macroscopic forms of hepatic cancer:
   A. Nodal. B. Fungoid. C. Multiple-node. D. Diffuse. E. Ulcerated.
5. Name the processes prevailing in the pancreas in chronic pancreatitis:
   A. Sclerotic. *D. Formation of regeneration adenomas.*
   B. Atrophic. *E. Destructive.*
   C. Inflammatory.
6. Name the morphological features: 1) small-node cirrhosis of the liver 2) large-node cirrhosis of the liver:
   A. Granular surface of the liver.
   B. Rapprochement of portal triads and central veins.
   C. Coarse surface of the liver.
   D. Annular development of the connective tissue with fine false lobules.

   Answers: 1. No; 2 (b, d, e); 3 (a, c, d); 4 (a, c, d); 5 (a, b, d); 6 (1a, 1d, 2b, 2c).

Stages of individual work in class

Study and describe macrospecimens:

1. Toxic degeneration of the liver

Pay attention to the size of the organ, condition of the capsule and consistence of the liver, appearance of the surface on incision. Name the stage of toxic degeneration, causes of its occurrence and outcomes.

2. Small-node cirrhosis of the liver with splenomegaly

Describe the appearance of the liver and spleen, size of the organs, condition of the capsule and the surface on incision, consistence. Name the causes of development of the small-node cirrhosis. Characterize the condition of the portal circulation in cirrhosis of the liver.

3. Cardiac "nutmeg" cirrhosis of the liver.

Describe the condition of the surface of the liver, its consistence, appearance of the organ on incision. Name the diseases, when the cardiac cirrhosis of the liver can be developed.

4. Biliary cirrhosis of the liver in atresia of the bile ducts in children.

Define the sizes of the liver, consistence, appearance of the capsule on incision. Which kind of biliary cirrhosis is it? Name the causes of development of biliary cirrhosis.

5. Biliary cirrhosis of the liver in the adult.

Pay attention to the sizes of the liver, its consistence, the character of the surface and the appearance on incision. Name the features of decompensated cirrhosis of the liver, its complications and outcomes.

6. Large-node cirrhosis of the liver.

Describe the sizes and appearance of the liver, condition of the capsule, the size of the nodes. Name the causes of development of large-node cirrhosis, its complications and outcomes.

7. Pigment cirrhosis of the liver and pancreas in hemochromatosis.

Pay attention to the appearance of the organs, their colour, consistence, condition of the surface on incision. Name pigments, collecting in the organs in hemochromatosis. Specify the cause of development of this kind of cirrhosis. What is the colour of the skin in hemochromatosis? What are the results of the changes in the pancreas in this disease?

8. Varicose phlebectasia of the esophagus.

Describe the condition of the veins of the esophagus. In what part of the esophagus does this pathological process develop? Explain the mechanism of its development. In what disease does this pathology develop? Name its complications.

9. Chronic calculous cholecystitis.

Define the size of the gallbladder, the condition of its wall and contents. Specify the factors that promote formation of the stones. Name the kinds of the stones of the gallbladder according to their chemical structure. Name possible complications.

10. Hemorrhagic pancreatitis.

What is the appearance of the pancreas: its size, colour, consistence? Define "acute pancreatitis". Name its complications and outcomes, classification of pancreatitis.

On the electrified stand study the slides:

- small-node cirrhosis of the liver
- biliary cirrhosis of the liver
- toxic degeneration of the liver.

Study, describe and draw microspecimens:

 # 212 – biliary cirrhosis of the liver (stained with hematoxylin and eosin).

At low magnification of the microscope it is necessary to find out overdevelopment of the connective tissue around the extended overflow bile ducts and capillaries; lymphoid-histiocytic infiltrates in portal ducts and in the interlobular stroma.

 # 213 – toxic degeneration of the liver – stage of yellow degeneration (stained with hematoxylin and eosin).

At low magnification of the microscope define the condition of hepatocytes in the center and on the periphery of the lobules paying attention to the wide-spread necrosis of the hepatic cells in the center of the lobules; at high magnification - on fatty degeneration of the preserved hepatocytes on the periphery of the lobules.

96 – Small-node cirrhosis of the liver (stained according to van-Gieson) Demonstration preparation (see: "Productive inflammation").

Krok questions:

1. A histological examination of a male patient, who abused alcohol and died from ethanol poisoning, revealed in his pancreas an atrophy of the parenchyma, dilation of ducts which resembled cysts in some places, formation of regenerative adenomata, sclerosis, a focal petrification and lymphohistiocytic stromal infiltrations. Which of the diagnoses listed below was the most probable?

A. Fatty pancreatonecrosis.
B. Haemorrhagic pancreatitis.
C. Acute purulent pancreatitis.
*D. Chronic pancreatitis.**
E. Pancreatic carcinoma.

2. A microscopic examination of a biopsy from the liver of a patient with a clinical picture of hepatic insufficiency revealed vegetations of the connective tissue in the central parts of the hepatic lobules, bringing of the central veins together with the portal triads (3-4 triads in one visual field of a microscope), a dystrophy, necrosis and regeneration of hepatocytes with a change in the structure of the liver. Which of the diagnoses listed below was the most probable?

*A. Postnecrotic hepatic cirrhosis.**
B. Laennec's cirrhosis.
C. Hanot's cirrhosis.
D. Secondary biliary cirrhosis.
E. Pigmentary cirrhosis.

3. An autopsy of a 48-year-old female, who died from intoxication, revealed icteric colouring of the skin and sclerae, the liver was characterized by a sharply reduced size, flaccid consistency and a contracted capsule. On section, the hepatic tissue was red and plethoric. Microscopically, the hepatocytes were necrotized in the centres of the lobules and in the state of fatty degeneration on the periphery; the reticular stroma of the organ was exposed, the sinusoids were dilated and sharply plethoric. Which of the diagnoses listed below was the most probable?

A. Steatosis.

B. Acute productive hepatitis.

C. Chronic active hepatitis.

D. Toxic dystrophy of liver at the stage of yellow dystrophy.

*E. Toxic dystrophy of liver at the stage of red dystrophy.**

Questions to control the knowledge:

1. Hepatosis: definition, classification, etiology, pathogenesis, morphological characteristic, complications, outcomes.
2. Viral and alcoholic hepatitis: definition, classification, etiology, pathogenesis, morphological characteristics of complications, outcomes.
3. Cirrhosis of the liver: definition, Mexican classification, etiology, pathogenesis, morphological characteristics, complications, outcomes.
4. Cancer of the liver: precancerous processes in the liver, macro- and microscopic forms of cancer, ways of metastatic spreading, complication.
5. Cholecystitis: definition, classification, morphological manifestation of the inflammation, complications and outcomes.
6. Stones of the gallbladder, cholelithiasis: their complications and outcomes.
7. Cancers of the gallbladder.
8. Acute and chronic pancreatitis: etiology, pathogenesis, morphological features, complications and outcomes.
9. Cancer of the pancreas: macro- and microscopic forms of cancer, ways of metastatic spreading, causes of death.

Terminology

Hepatosis (toxic degeneration of the liver, progressing massive necrosis, yellow and red degeneration, hepatorenal syndrome, hepatargia, chronic toxic degeneration of the liver, fatty hepatosis, alcoholic steatosis, disseminated obesity of hepatocytes, zone obesity, diffuse obesity, fatty cysts); hepatitis (aggressive, destructive, persistent, cholestatic, alcoholic, epidemic; Kaunsilman's corpuscles, step and bridge necrosis; large white liver, large motley liver, large-node liver); cirrhosis of the liver (small-node, large-node , monolobular, multilobular; capilarization of sinusoids; intrahepatic portocaval shunts; portal, biliary, postnecrotic cirrhosis; compensated and decompensated cirrhosis of the liver).

Practical habits and skills

It is necessary to be able to diagnose hepatitis, cirrhosis of the liver, cholecystitis and pancreatitis, basing on the appearance of the organs; to give the definitions to hepatitis, hepatosis, cirrhosis, cholecystitis and pancreatitis.

Revise the word-building elements

hepato – liver
chole – bile
bili – bile
cholecysto – gallbladder
pancreato – pancreas
amylo – starch
gluco – sugar
glyco – sugar
glycogeno – glycogen
lipo – fat
litho – stone

Lesson

Subject: Diseases of the endocrine glands

Validation of the subject: the knowledge of morphological changes in the endocrine glands is necessary for studying diseases as well as in practical work of the doctor for the clinicoanatomical analysis of sectional material

Objectives of the lesson: to study the etiology, pathogenesis, morphological changes in the glands in diabetes mellitus, goiter, Addison's disease and Itsenko-Cushing disease; to study their clinicoanatomical manifestations, complications, causes of death.

Visual aids

Annotated tables:

- diabetes mellitus;
- pathogenesis and stages of diabetes mellitus;
- prediabetic condition in children;
- goiter;
- Addison's disease.

Slides:

- colloid goiter;
- intercappilar (diabetic) glomerulosclerosis;
- atrophy of the pancreas.

Electronic micrographs:

- ultrastructure of the human thyroid gland;
- skin in Addison's diseas;

Macrospecimens:

- atrophy of the pancreas;
- gangrene of the foot;
- skeleton in acromegaly;
- goiter;
- various kinds of pararenal adenoma.

Microspecimens:

- # 40 – colloid goiter;
- # 214 – atrophy of the pancreas in diabetes mellitus;
- # 191 – intercapillary (diabetic) glomerulosclerosis.

Questions to control basic knowledge:

1. Does diabetes mellitus develop at reduction of the function of beta cells of the pancreas?
2. Which of the listed pathological processes can result in development of cachexia:
   A. Basedowian goiter.
   B. Necrosis of the anterior part of the pituitary body.
   C. Caseous necrosis of the medullar layer of the adrenal glands.
   D. Basophil adenoma of the pituitary body.
3. Name the basic features, characteristic for diabetes mellitus:
   A. Gigantism. *E. Polydipsia.*
   B. Hyperglycemia. *F. Polyuria.*
   C. Bronze colour of the skin. *G. Obesity.*
   D. Glucosuria. *H. Macromicroangiopathy.*
   I. Lypomatosis of the lymphohistiocyte system.
4. Which of the listed syndromes can develop in affection of: 1) anterior part of the pituitary body, 2) posterior parts of the pituitary body:
   A. Acromegaly. *D. Hypophyseal nanism.*
   B. Itsenko-Cushing disease. *E. Hypophyseal cachexia.*
   C. Diabetes insipidus.

Answers: 1. Yes; 2 (a, b, c); 3 (b, d, e, f, g, h, i); 4 (1) a, b, d, e, (2) c.

Stages of individual work in class

Study and describe macrospecimens:

1. Atrophy of the pancreas in diabetes mellitus.

Note the change of the size, consistence, colour of the pancreas, appearance of the organ on incision. Define the changes which develop in the organism in diabetes mellitus.

2. Gangrene of the foot.

Pay attention to the colour of the skin, presence of the border between necrosis and healthy tissue. Name pathological process being the causes of gangrene.

3. Skeleton in acromegaly.

Describe the body height, proportionality of the development of all body parts. Specify the causes of the disease, complications and causes of death.

4. *Colloid* goiter

Pay attention to the change in the size and surface of the gland, its consistence, kind of the tissue on incision. Functional activity of the thyroid gland in goiter; the basic causes of death in basedowian disease.

5. Adenoma of the adrenal gland.

Characterize the size of the adrenal gland, the kind of the tumour, its colour, presence of the capsule. Name hormone-active adenomas of the cortical layer of the adrenal glands.

6. Bone in parathyroid osteodystrophy.

Describe the character of the bone, its colour on incision, condition of the spongiosa. Specify the cause of the disease, changes of calcium content in the blood, kidneys; the causes of death.

Study, describe and draw microspecimens:

 # 40 – colloid goiter (stained with hematoxylin and eosin).

At low magnification find follicles, note their shape, size, colour of the colloid. At high magnification pay attention to the condition of the epithelium.

 # 214 – atrophy of the pancreas in diabetes mellitus (stained with hematoxylin and eosin).

At low magnification find Langerhans's islets, define their quantity, sizes, character of the pathological process. Pay attention to the condition of the stroma of the gland. At high magnification describe the condition of the beta cells.

 # 191 – diabetic glomerulosclerosis (stained with hematoxylin and eosin).

At low and high magnifications find glomeruli of the kidney paying attention to the focal clumps in mesangium of eosinophilic hyaline masses and diffuse thickening of basal membranes of glomerular capillaries. Name the cause of death in this disease.

Krok questions:

1. In a young male, an abundant quantity of the somatotropic hormone and enlargement of the nose, lips, ears, lower jaw, hands and feet were revealed. What is your diagnosis?

A. Pituitary dwarfism.
B. Cushing's disease.
C. Addison's disease.
D. Adiposogenital dystrophy.
*E. Acromegaly.**

2. A histological examination of a thyroid gland revealed follicles of various size and shape which were lined with the columnar epithelium; the latter proliferated and formed papillae of various size. The follicular lumens contained some liquid and vacuolized colloid. The stroma of the gland was characterized by a lymphoplasmacytic infiltration, in some places with formation of lymphatic follicles having light centres. Which of the diagnoses was the most probable?

A. Colloid goiter.
B. Nodular goiter.
C. Hashimoto's disease.
D. Ligneous thyroiditis.
*E. Toxic goiter.**

3. An autopsy of a 48-year-old male, who died from vascular collapse, revealed an increased pigmentation of the skin, the adrenal glands were reduced in size, the brown-yellow liver was enlarged. On histological examination, foci of necrosis with a tuberculous granulation tissue were found in the adrenal glands. The liver was characterized by phenomena of fatty degeneration. Which of the diagnoses was the most probable?

*A. Addison's disease.** *C. Primary aldosteronism.* *E. Lipofuscinosis.*
B. Steatosis. *D. Cushing's syndrome.*

Questions to control the knowledge:

1. Classification of the internal secretion glands diseases.
2. Etiology, pathogenesis, complications of diabetes mellitus, causes of death.
3. Morphological characteristic of diabetes mellitus.
4. Etiology, pathogenesis, classification, complications of goiter, causes of death.
5. Mechanism of melanosis development in Addison's disease.

Terminology

Nodular goiter, diffuse goiter, parenchymatous goiter, colloid goiter, basedowian goiter, Hashimoto's disease; diabetes mellitus, diabetic angiopathies, nephrosclerosis, Kimmelstiel-Wilson syndrome, coma, melanosis.

Practical habits and skills

On the basis of the received knowledge it is necessary to be able to diagnose the diseases of the endocrine glands and to carry out clinicoanatomical analysis of the sectional material

Revise the word building elements

thyro – thyroid gland
thyroido – thyroid gland
toxico – poison
adreno – adrenal glands
adrenalo – adrenal glands
cortico – cortex
gluco – sugar
thymo – thymus
somato – body
andro – male
pancreato – pancreas
estro – female
uro – urine
melano – black
nephro – kidney
-osis – disease
-sclerosis – hardening

Навчальне видання

ХВОРОБИ БРОНХО-ЛЕГЕНЕВОЇ СИСТЕМИ, СИСТЕМИ ТРАВЛЕННЯ, ПЕЧІНКИ, ЖОВЧНОГО МІХУРА, ПІДШЛУНКОВОЇ ТА ЕНДОКРИННИХ ЗАЛОЗ

Методичні вказівки до занять з патоморфології для студентів медичних вузів з англійською мовою навчання

Упорядники Сорокіна Ірина Вікторівна
Марковський Володимир Дмитрович
Корнейко Ірина Василівна
Губіна-Вакулик Галина Іванівна
Гаргін Віталій Віталійович
Плітень Оксана Миколаївна
Мирошниченко Михайло Сергійович
Потапов Сергій Миколайович
Бочарова Тетяна Вікторівна
Галата Дар′я Ігорівна
Калужина Оксана Володимирівна

Відповідальний за випуск І.В. Сорокіна

Комп′ютерний набір І.В. Сорокіна
Комп′ютерна верстка Н.І. Дубська

Ум. друк. арк. 1,25. Зам. № 16-33199.

Редакційно-видавничий відділ
ХНМУ, пр. Науки, 4, м. Харків, 61022
izdatknmu@mail.ua

Свідоцтво про внесення суб'єкта видавничої справи до Державного реєстру видавництв, виготівників і розповсюджувачів видавничої продукції серії ДК № 3242 від 18.07.2008 р.

DISEASES OF THE RESPIRATORY SYSTEM, GASTROINTESTINAL TRACT, LIVER, GALLBLADDER, PANCREAS AND ENDOCRINE GLANDS

Manual for practical classes in pathomorphology for English-speaking medical students