

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ**  
**Харківський національний медичний університет**

**KIDNEY DISEASES. DISEASES OF THE FEMALE  
AND MALE REPRODUCTIVE SYSTEM,  
PREGNANCY AND PUERPERAL PERIOD.  
PRENATAL AND PERINATAL PATHOLOGY**

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

**ХВОРОБИ НИРОК, ЧОЛОВІЧОЇ І ЖІНОЧОЇ  
РЕПРОДУКТИВНИХ СИСТЕМ, ВАГІТНОСТІ  
ТА ПІСЛЯПОЛОВОГО ПЕРІОДУ.  
ПРЕ- ТА ПЕРИНАТАЛЬНА ПАТОЛОГІЯ**

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

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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 нирок, чоловічої і жіночої репродуктивних систем, вагітності та післяполового періоду. Пре- та перинатальна патологія : метод. вказ. до занять з патоморфології для студентів медичних вузів з англ. 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. Мирошніченко  
                          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:

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## Lesson

### Subject: Kidney diseases

**Validation of the subject:** the knowledge of morphological changes in the kidneys in different diseases is necessary for doctors of different specialities for formation of clinical anatomical mentality which is important for making diagnosis and effective treatment.

**Objective of the lesson:** basing on the modern classifications of kidney diseases, to study the etiology, pathogenesis, morphological manifestations, complications and outcomes of tubulo- and glomerulopathies, pyelonephritis, kidney amyloidosis, nephrosis, nephrolithiasis and nephrosclerosis.

## Visual aids

### *Annotated tables:*

- classification of kidney diseases, tubulopathies;
- kidney amyloidosis;
- liponephrosis;
- necrotic nephrosis;
- nephrosclerosis;
- kidney tumours.

### *Coloured tables:*

- glomerulonephritis;
- specific microscopic staining for amyloid.

### *Macro specimens:*

- malignant glomerulonephritis;
- acute glomerulonephritis;
- ascending pyelonephritis;
- kidney amyloidosis;
- secondary nephrosclerosis;
- nephrohydrosis;
- kidney stones;
- polycystic kidney.

### *Slides:*

- intracapillary glomerulonephritis;
- malignant intra- and extracapillary glomerulonephritis;
- kidneys amyloidosis;
- nephrosclerosis;
- necrotic nephrosis.

### *Micro specimens:*

- # 193 membranous glomerulonephritis;
- # 194 malignant intra- and extracapillary glomerulonephritis;
- # 197 acute extracapillary serous glomerulonephritis;
- # 37 kidneys amyloidosis;
- # 73 necrotic nephrosis.

### *Electronograms:*

- membranoproliferative glomerulonephritis;
- glomerulitis with minimal changes.

### **Questions to control basic knowledge:**

- 1) Is granular kidney possible in pyelonephritis?
- 2) Which of the diseases cause development of large mottled kidney?
  - A. Purulent nephritis.
  - B. Necrotic nephritis.
  - C. Malignant glomerulonephritis.
  - D. Kidney amyloidosis.
  - E. Acute glomerulonephritis.

- 3) List the morphological changes typical for membranous glomerulonephritis:
  - A. *Diffuse thickening of capillary membranes of the glomeruli.*
  - B. *Reduced size of the kidneys.*
  - C. *Moderate proliferation of mesangiocytes.*
  - D. *Granular surface of the kidneys.*
- 4) Which complications develop in pyelonephritis?
  - A. *Pyelophlebitis abscesses.*
  - B. *Kidney carbuncle.*
  - C. *Paranephritis.*
  - D. *Peritonitis.*
  - E. *Hypertension.*
- 5) List the changes in the respiratory system in chronic renal insufficiency:
  - A. *Fibrinous hemorrhagic tracheitis.*
  - B. *Fibrinous tracheitis.*
  - C. *Pulmonary edema.*
  - D. *Hemorrhagic pulmonary infarctions.*
- 6) Which of the symptoms refer to: 1) Renal, 2) Extrarenal:
  - A. *Oliguria.*
  - B. *Azotemia.*
  - C. *Proteinuria.*
  - D. *Hypertension.*
  - E. *Edema.*
  - F. *Hematuria.*

### **Stages of individual work in class**

#### **Study and describe the macro specimen:**

*Malignant glomerulonephritis ("large mottled kidney")*. Pay attention to the size (texture, appearance) of the kidney, and correlation and colour of the cortical and medullar substances on incision. How can we explain the appearance of the kidney? Which peculiarities of blood circulation are present in the kidney in glomerulonephritis?

*Acute glomerulonephritis*. Determine the size and the character of the kidney surface; describe the state of the cortical and medullar substances. List renal and extrarenal signs of glomerulonephritis. Explain the etiology and pathogenesis of the disease.

*Ascending pyelonephritis*. Describe the appearance of the serous membrane of the ureter and the pelvis of the kidney: size, surface, texture of the kidney. Determine the kind of inflammation, name the etiological factors of pyelonephritis, the ways of infection invasion to the kidney, complications and outcomes of pyelonephritis.

*Secondary nephrosclerosis*. Describe the appearance and size of the organ, its texture, state of the surface, cortical and medullar substances on incision. List the processes resulting in secondary nephrosclerosis. Name the forms of nephrosclerosis and their outcomes.

*Kidney amyloidosis*. Pay attention to the size, appearance of the surface, the colour of the parenchyma on incision and the state of the layers. List the diseases in which kidney amyloidosis occurs. Determine the localization of amyloid in the kidney. Explain the etiology, pathogenesis and outcomes of kidney amyloidosis.

*Polycystic kidney.* Describe the size of the kidneys, their appearance (the surface on incision). Explain the etiology, pathogenesis, outcomes of the disease.

*Nephrohydro-sis* (see "Atrophy")

*Stones in kidney* (see "Disturbances in electrolyte metabolism")

**Study the electronograms:**

- intra- and extracapillary glomerulonephritis;
- kidney amyloidosis;
- necrotic nephrosis;
- nephrosclerosis.

**Study, draw and describe the microspecimen:**

# 193 *Mesangiocapillary glomerulonephritis (stained with hematoxylin and eosin).* At low magnification, pay attention to diffuse thickening of the capillary membranes of the glomeruli, moderate proliferation of mesangiocytes, enlarging of the vascular lobules with focal hyalinosis and clutching character of the glomeruli, the accumulation of the matrix in the mesangium. In the epithelium of the convoluted tubules, there is granular and ballooning degeneration, in the lumen there are hyalin cylinders.

# 194 *Malignant intra- and extracapillary glomerulonephritis (stained with hematoxylin and eosin).* Pay attention to the enlargement of endotheliocytes and mesangiocytes in separate glomeruli, proliferation of nephrothelium of the glomerular capsules with semilunar formations; presence of empty hyalinized glomeruli; in some glomeruli there is serous, fibrinous, hemorrhagic exudation in the lumen of Bowman's capsules; in the epithelium of convoluted tubules – granular degeneration, in the lumen of the collecting tubes – hyalinized cylinders.

# 197 *Acute extracapillary serous glomerulonephritis (stained with hematoxylin and eosin).* At low magnification, find glomeruli containing eosinophilic serous content in the lumen of Bowman's capsules. Demonstrative specimen.

# 37 *Kidney amyloidosis (stained with Congo red).* At low magnification, determine congophilic structures in the kidney – in the glomeruli, tubules, vessels and stroma (deposition of amyloid in the stroma of the glomeruli, under argiophilic membranes of the blood vessels, under the tunic of glandular cells, along the fibrillar structures in the stroma of the kidney).

**Study the electronogram "Membranoproliferative glomerulonephritis"**

Pay attention to the thickening of the basement glomerular membrane of the capillaries, activation of mesangium cells.

**Questions to control basic knowledge:**

1. Definition of pyelonephritis
2. List the forms of extracapillary exudative glomerulonephritis: a)..., b)..., c)...

3. Name the stages of kidney amyloidosis: a)...., b)...., c)...., d)....
4. What groups of hereditary tubular enzymopathies do you know: a)...., b)...., c)....
5. As the outcome of which diseases does nephrosclerosis develop? a)...., b)...., c)....
6. List morphological changes in uremia: a)...., b)...., c)...., d)...., e)....
7. Problem. The autopsy of the man who had chronic fibrinous cavernous tuberculosis and died of uremia has demonstrated large waxy kidneys. Name the pathological process which complicated the course of the basic disease.

*Answers:* 1. It is infectious disease involving the renal pelves, calyces and the substance of the kidneys with primary damage of the interstitial tissue. It is interstitial nephritis; 2. a) serous, b) fibrinous, c) hemorrhagic. 3. a) latent, b) proteinemic, c) nephrotic, d) azotemic. 4. a) tubulopathies with polyuria syndrome, b) tubulopathies manifesting as rickets, osteopathy, c) tubulopathies with nephrolithiasis and nephrocalcinosis. 5. a) primary hypertension, b) atherosclerosis, c) diabetes mellitus. 6. a) pharyngitis, b) esophagitis, c) gastritis, d) enteritis, e) colitis. 7. Kidney amyloidosis.

### **Questions to control the knowledge:**

1. Classification of kidney diseases.
2. Definition, etiology and pathogenesis of glomerulonephritis; renal and extrarenal symptoms of glomerulonephritis; classification according to the topography of the process, the character of tissue reactions and the type of exudation; macro- and microscope peculiarities of acute, malignant and chronic glomerulonephritis.
3. Nephrosis; definition, classification, etiology, pathogenesis, pathological anatomy and the outcome.
4. Kidney amyloidosis: definition, etiology, pathogenesis, pathological anatomy of its stages, complications, the cause of death.
5. Chronic and acute tubulopathies: definition, etiology, pathogenesis, pathological anatomy, complications and the cause of death.
6. Nephrolithiasis and pyelonephritis; definition, etiology, pathogenesis, pathological anatomy, complication, the cause of death.
7. Nephrosclerosis: definition, causes, kinds, outcomes.
8. Chronic renal insufficiency: definition, pathological anatomy.
9. Kidney tumours.

### **Krok questions:**

1. A 42-year-old male, who was ill with a severe form of typhoid fever, developed acute renal failure which caused his death. On autopsy, the kidneys were enlarged, oedematous, their fibrous capsule was easily removed; on section, the cortical substance was pale grey, the malpighian pyramids were dark red. A histological examination revealed that the lumens in the most of the tubules were narrowed, the epithelial cells were enlarged and had no nuclei; the glo-

meruli were collapsed; the stroma was characterized by an oedema, some leukocytic infiltration and small haemorrhages. Indicate the renal pathology which caused the patient's death.

A. *Acute pyelonephritis.*

D. *Pyonephrosis.*

B. *Nephrotic syndrome.*

E. *Necronephrosis.\**

C. *Acute glomerulonephritis.*

2. An autopsy of a 62-year-old male patient revealed that his skin was grey-sallow with microfocal haemorrhages, his face was as if covered with some whitish powder, the patient had fibrinous-haemorrhagic laryngitis, tracheitis, fibrinous pericarditis, gastritis, enterocolitis. What syndrome is characterized by this complex of morphological changes?

A. *Chronic renal insufficiency.\**

D. *Chronic cardiac insufficiency.*

B. *Cushing's.*

E. *Chronic hepatic insufficiency.*

C. *Acute renal failure.*

3. A histological examination of a 56-year-old male, who died from chronic renal insufficiency, revealed the following changes: focal sclerosis and a lymphoplasmacytic infiltration of the interstice, mucous membranes of the pelvis and calyces, a metaplasia of the transitional epithelium into the stratified squamous one, numerous encapsulated abscesses. The epithelium of the tubules was in the state of dystrophy and necrosis. The lumens of solitary tubules were dilated and filled with some colloid contents, the epithelium was flattened (the tissue resembled the thyroid gland). The glomeruli were focally scleroid. Name the pathological process.

A. *Acute pyelonephritis.*

D. *Chronic pyelonephritis.\**

B. *Chronic tubulointerstitial nephritis.*

E. *Chronic glomerulonephritis.*

C. *Necronephrosis.*

### Terminology

Glomerulopathies, glomerulonephritis; membranous, mesangial, mesangio-proliferative, mesangio-capillary, lobular, terminal, fibroplastic, exudative, productive, intra- and extracapillar; tubular; tubulointerstitial, tubulointerstitial vascular components of glomerulonephritis; acute malignant, chronic glomerulonephritis; "mottled kidney"; semilunar formations of productive type; glomerulosclerosis.

Acquired tubulopathies: necrotic nephrosis, kidney in myeloma, "podagral kidney", hereditary tubular enzymopathies, sublimate kidney, "hemolytic" kidney, paraproteinemic nephrosis.

Congenitive tubulopathies: Alport's syndrome, hereditary nephrosis, family nephrotic amyloidosis, cystinuria, glycinuria, primary hyperoxaluria, renal tubular acidosis.

Pyelonephritis: interstitial nephritis, thyroid kidney, kidney carbuncle, papilloncrosis.



Nephrolithiasis: urinary stasis, pyeloectasia, hydrocalcinosis, hydronephrosis, ureteritis, pyelonephrosis, pyoureteronephrosis, pyelitis, apostematous nephritis, chronic suburemia.

### **Practical habits and skills**

Students are to be able to classify renal diseases, to define pathological processes in the kidney basing on macro- and microscope changes in them.

### **Revise the word-building elements:**

Glomerulo – glomerulus  
nephro – kidney  
reno – kidney  
tubulo – tubule (small tube)  
litho – stone  
hydro – water  
uretero – ureter  
extra – outside  
intra – inside  
-ectasia – narrowing  
-emia – blood condition  
-itis – inflammation  
-pathy – disease  
-sclerosis – hardening  
-osis – disease  
-uria – urine, urination  
-oid – resembling

### **Lesson**

#### **Subject: Diseases of the female and male reproductive system, pregnancy and puerperal period**

**Validation of the subject:** the knowledge about different pathology of reproductive system is necessary for doctors of different specialities for formation of clinical anatomical mentality, which is important for making diagnosis and effective treatment especially in obstetrics, gynecology, urology, endocrinology, pediatrics.

**Objective of the lesson:** basing on the modern ideas, to study the classification, etiology, pathogenesis, morphological manifestations, complications and outcomes of dyshormonal, inflammatory and neoplastic diseases of female reproductive system and diseases associated with pathology of pregnancy and puerperal period.

## Visual aids

### *Annotated tables:*

diseases of pregnancy and puerperal period;  
classification of genital diseases;  
dys hormonal diseases of female and male reproductive system.

### *Coloured tables:*

fibroadenoma of the breast.

### *Macro specimens:*

adenoma of the prostate gland;  
false erosion of the cervix;  
hydatidiform mole;  
fetus papyraceus;  
lithopedion;  
postpartum endometritis;  
tubal pregnancy;  
ovarian pregnancy;  
fibromyoma of the uterus;  
fibromyoma of the breast;  
metastasis of chorionepithelioma in the liver;  
breast cancer.

### *Slides:*

false erosion of cervix;  
glandular hyperplasia of the endometrium;  
fibromyoma of the uterus;  
fibromyoma of the breast.

### *Micro specimens:*

# 145 glandular hyperplasia of the endometrium;  
# 226 false erosion of the cervix;  
# 229 residues of abortion;  
# 228 tubal pregnancy;  
# 227 chorionepithelioma.

### *Electronograms:*

hydatidiform mole.

## Questions to control basic knowledge:

- 1) Is ectopic pregnancy caused by disturbance of contractile activity?
- 2) Name the diseases of puerperal period:

A. *Tubal pregnancy.*

D *Hydatidiform mole. .*

B. *Placental polyp.*

E. *Eclampsia.*

C. *Chorionepithelioma.*

F. *Ectropion.*

- 3) Which morphological changes characterise hydatidiform mole?  
 A. *Hydropic degeneration of the chorion villi.*  
 B. *Adenomatous structure of the villi.*  
 C. *Epithelium proliferation of the chorion villi.*  
 D. *Absence of the vessels in the villi.*
- 4) Name the diseases of pregnancy:  
 A. *Hydatidiform mole.* . E. *Chorionepithelioma.*  
 B. *Eclampsia.* F. *Premature labor.*  
 C. *Labor infection of the uterus.* G. *Placental polyp.*  
 D. *Ectopic pregnancy.* H. *Spontaneous abortion (miscarriage).*
- 5) List the possible types of the ectopic pregnancy:  
 A. *Tubal pregnancy.* D. *Abdominal pregnancy.*  
 B. *Hydatidiform mole.* E. *Ectropion.*  
 C. *Ovarian pregnancy.*
- 6) Give examples of benign and malignant tumours of the uterus:  
 A. *Fibromyoma.* D. *Chorionepithelioma.* H. *Adenocarcinoma*  
 B. *Sarcoma.* E. *Leiomyoma.*  
 C. *Squamous cell carcinoma.* F. *Polyp.*  
 Answers: 1) yes, 2) b, c, d, f, 3) a, c, d, 4) b, d, f, h, 5) a, c, d, 6) 1 – a, e, f, 2 – b, c, h.

### Stages of individual work in class

#### Study and describe the macro specimen:

*False erosion of the cervix.* Indicate the localization of the erosion. Characterise: a) outlines, b) surface, c) colour. Name the types of false erosion: a) ... , b) ... . What are the complications and outcomes: a) ... , b) ... , c) ... ?

*Adenoma of the prostate gland.* Describe the appearance of the prostate gland: size, consistence, and colour. Give a synonym for adenoma of the prostate gland. Name its morphological types. Characterise the condition of the urethra, the size of the bladder, the condition of the bladder wall, bladder cavity and trabecular apparatus.

*Hydatidiform mole.* Describe the appearance of the hydatidiform mole: character of changes, sizes of the “bubbles” and their amount. Name the cause of the hydatidiform mole, types of degeneration, outcomes.

*Fetus papyraceus.* What is appearance of the macrospecimen: sizes of the fetus, the character of the changes. Name the cause, type of ectopic pregnancy.

*Lithopedion.* Describe the appearance of the fetus: its size, consistence. What is the cause of this pathology? Name the type of ectopic pregnancy and type of calcification.

*Tubal pregnancy.* Characterise the size of the tube, condition of the wall, contents of the lumen, localization of the pregnancy. Name the types of the tubal abortion. List the outcomes of tubal pregnancy for the fetus.

*Postpartum endometritis.* Characterise the size of the uterus, its appearance (the surface on incision). Explain the etiology and pathogenesis. List the types of endometritis according to the labor and the outcomes of the disease.

*Cancer of the uterus body.* What its the appearance of the organ, size, character of growth in relation to the lumen and surrounding tissue? List the types of the cancer according to the character of growth and form. List possible histological types.

*Metastasis of chorionepithelioma in the liver.* Describe the appearance of the organ and metastatic nodes. Which pathological process can precede the tumours?

*Fibromyoma of the uterus.* Characterize the appearance (size, localization of the tumour nodes in relation to the layers of the uterus wall. Describe the boundary of the tumour nodes, their colour, density, the surface on incision.

*Breast cancer.* Characterize the appearance of the organ, name the form of the tumour, histological types of breast cancer, precancerous processes, possible metastases.

### **Study, draw and describe the microspecimen:**

# 226 *false erosion of the cervix (stained with hematoxylin and eosin).* Characterise the changes of the vaginal part of the cervix. Name the cause of appearance for such pathology. Name the outcomes.

# 229 *residues of abortion (stained with hematoxylin and eosin).* At low magnification, pay attention to the presence of cells of decidual tissue, chorion villi, hemorrhages and fibrinoid necrosis.

# 228 *tubal pregnancy (stained with hematoxylin and eosin).* At low magnification describe the wall of the tube, pay attention to it thickening. The mucosa is preserved in separate foci resembling papilla overgrowth; it is covered with cylindrical epithelium. The tube is thinned and soaked with blood in one of the fragment. There are isolated chorion villi and cells of decidual tissue in the mucosa.

# 145 *glandular hyperplasia of the endometrium (stained with hematoxylin and eosin).* At low magnification pay attention to the thickened endometrium due to the presence of big amount of coiled glands with papilla overgrowth; some of them with dilated lumens.

# 227 *chorionepithelioma (stained with hematoxylin and eosin).* Pay attention to the presence of light epithelial Langerhans cells with the appearance of giant, multiplied and polymorph cells of syncytium among them.

Study the electronogram "Hydatidiform mole".

Pay attention to the cytoplasm of syncytium cell, which is filled with vacuoles and presence of numerous pinocytotic bubbles in the microvilli.

### **Questions to control basic knowledge:**

1. Give classification of the diseases of reproductive system: a)... , b)... , c) ... .
2. Name main types of ectopic pregnancy: a)... , b) ... , c) ... , d) ... .

3. Which structural cellular elements allow to diagnose the disturbed tubal pregnancy: a) ... , b) ... , c) ... , d) ... ?

4. What is a modern term for hypertrophy of the prostate gland (according to character of the pathological process)? Name its histological types: a) ... , b) ... , c) ... , d) ... ?

5. What are main etiological factors in development of postnatal infection of the uterus: a) ... , b) ... , c) ... ?

6. Name precancerous conditions of the breast: a) ... , b) ... , c) ... .

7. Problem. The women with 27 weeks pregnancy developed metrorrhagia after removing of fetus in after lifting a heavy thing. What is your diagnosis?

*Answers:* 1. a) dyshormonal, b) inflammatory, c) neoplastic; 2. a) tubal, b) ovarian, c) abdominal; 3. a) decidual cells, b) chorion villi, c) clots of blood in the lumen of the tube; d) loosening and thinning of the tubal wall; 4. a) adenoma, b) dyshormonal hyperplastic prostatopathy, c) glandular, d) musculofibrous e) combined; 5. a) staphylococcus, b) streptococcus, c) colibacillus; 6. a) dyshormonal dysplasia, b) gynecomastia, c) gastritis, d) enteritis, e) colitis; 7. Late abortion.

### **Questions to control the knowledge:**

1. Classification of the diseases of the female reproductive system.

2. What are the most common diseases of the male reproductive system?

3. Etiology and pathogenesis of dyshormonal and inflammatory diseases of the uterus.

4. Clinicomorphological characteristic of inflammatory diseases of the reproductive system.

5. The most common types of pregnancy pathology, its causes and outcomes.

6. The concept of spontaneous abortion, labor infection, placental polyp, hydatidiform mole; their outcomes and complications.

7. Etiology, pathogenesis and pathomorphology of eclampsia and its complications.

8. Benign and malignant tumours of the reproductive system.

### **Krok questions:**

1. Microscopically, a scrape from the uterine cavity, taken in a 36-year-old female against a background of uterine bleeding, revealed a neoplasm which consisted of a large number of light epithelial cells of Langhans and multinuclear symplasts, the number of figures of mitosis was increased. The stroma was absent, the vascular cavities were lined with the above cells. Make a diagnosis of the uterine tumour.

A. *Choriocarcinoma.\**

B. *Endometrial polyp.*

C. *Endometrial adenocarcinoma.*

D. *Simple hydatidiform mole.*

E. *Invasive hydatidiform mole.*

2. A 39-year-old female with a clinical picture of acute abdomen underwent surgical removal of an enlarged uterine tube. On examination, the serous coat of the uterine tube was dark purple, the lumen contained some blood clots. A histological examination of the wall of the tube revealed that the mucous membrane had layers of the decidual cells, and there were villi of the chorion among the blood clots. What is the most probable diagnosis?

- A. *Tubal pregnancy*.\*      C. *Choriocarcinoma*.      E. *Salpingitis*.  
B. *Placental polyp*.      D. *Haematosalpinx*.

3. A 19-year-old woman gave birth to a healthy male infant at term following an uncomplicated pregnancy. She has now been breast feeding the baby for a month, but notes that her left breast has gradually become swollen and painful to touch over the past week. On physical examination her temperature is 38.2 C. Which of the following is the most likely diagnosis?

- A. *Acute mastitis*.\*      C. *Fat necrosis*.      E. *Galactocele*.  
B. *Fibrocystic disease*.      D. *Intraductal papilloma*.

### Terminology

Dyshormonal diseases (adenoma of the prostatic gland, dyshormonal hyperplastic prostatopathy, glandular, musculofibrous hypertrophy, glandular hyperplasia of the endometrium), estrogens, dysfunction, false erosion of the cervix, ectropion, true erosion, endocervicosis, benign dysplasia of breast, mastopathy, gynecomastia, feminisation, endometritis, uterine sepsis, mastitis.

Pathology of pregnancy: eclampsia, ectopic pregnancy (tubal, ovarian, abdominal, ampullar, intraligamentary), spontaneous abortion, premature labor, hydatidiform mole, placental polyp, chorionepithelioma, labor infection, gestosis, fetus papyraceus, lithopedion, postpartum endometritis, complete tubal abortion, incomplete tubal abortion.

### Practical habits and skills

Students are to be able to determine pathological processes in the uterus, prostate and breasts basing on macro- and microscopic changes in them.

#### Revise the word-building elements:

Ec-	away, outside
Dys-	bad
Pre-	before
Adeno-	gland
Fibro-	fiber
Myo-	muscle
Hyper-	excessive
Carcino-	cancer
Topo-	place
-oma	tumor
-itis	inflammation
-plasia	development
-trophy	nourishment
-pathy	disease

## Lesson

### Subject: Prenatal and perinatal pathology

**Validation of the subject:** the knowledge about embryogenesis and perinatal pathology is necessary for mastering obstetric aspects in clinic, for understanding different types of pediatric pathology, for clinico-anatomical analysis of autopsy material which is especially important for future obstetricians, gynecologists, pediatricians.

**Objective of the lesson:** to study the division into period and regularity of progenesis and kymatogenesis, gametopathies, blastopathies and fetopathies; to study perinatal pathology.

### Visual aids

#### *Annotated tables:*

kymatogenesis and types of embryopathy;  
the causes of kymatopathies;  
classification of embryopathies;  
most common development defects;  
classification of pneumopathies;  
hemorrhagic disease of the newborn.

#### *Schemes:*

scheme of kymatogenesis and types of embryopathy;  
scheme of teratogenic period of separate organs and parts of the body according to Hertler;  
scheme of possible disturbances of development in period of blastogenesis according to Hertler.

#### *Macro specimens:*

craniopagus;  
thoracopagus;  
ischiopagus;  
anencephaly and acrania;  
cyclopia;  
ventricular septal defect of the heart;  
meckel's diverticulum;  
polycystic kidney;  
horseshoe kidney;  
megaloureter;  
chondrodysplasia;  
cerebral microfocal hemorrhage in asphyxia of the fetus;  
cephalhematoma;  
hyaline membrane disease;  
staphylococcal destruction of the lungs.

*Slides:*

generalized edema of the fetus;  
cyclopia;  
causal genesis of congenital defects;  
incomplete osteogenesis;  
hydrocephalus;  
ventricular septal defect of the heart;  
chondrodysplasia;  
basic congenital defects of development in the esophagus and trachea;  
fetus with two heads;  
fetus with doubling of the arms;  
ichthyosis;  
hernia of the vertebral column;  
herniation of the brain (encephalocoele);  
porencephalia;  
kidney of the immature child;  
congenital primary atelectasis;  
meconium aspiration;  
edematous hemorrhagic pulmonary syndrome;  
nuclear jaundice (kernicterus);  
diabetic fetopathy;  
deciduitis.

*Micro specimens:*

# 11 cerebral microfocal hemorrhage in asphyxia;  
# 12 stasis in cerebral vessels in asphyxia;  
# 15 lungs in hyaline membrane disease.

**Questions to control basic knowledge:**

- 1) Is atelectasis of the newborn associated with pneumopathies?
- 2) Which of the disease refer to noninfectious fetopathies:  
A. *Congenital syphilis.*                      D. *Hemorrhagic disease of the newborn.*  
B. *Mucoviscidosis.*                        E. *Fibroelastosis of the endocardium.*  
C. *Toxoplasmosis.*                         F. *Diabetic retinopathy.*
- 3) Name the signs of Fallot's triad:  
A. *Ventricular septal defect of the heart.*    C. *Stenosis of the pulmonary artery.*  
B. *Dextroposition of the aorta.*            D. *Hypertrophy of the right ventricle.*
- 4) Which of the types refer to blastopathy (I) and embryopathy (II):  
A. *Diplopagus.*    B. *Fallot's triad.*    C. *Ischiopagus.*    D. *Megaloureter.*  
Answers: 1) yes, 2) b, d, e, f, 3) a, c, d, 4) (I) a, c, (II) b, d.



## Stages of individual work in class

### Study and describe the macro specimen:

*Craniopagus*. Pay attention to accretion by heads. Give definition for diplopagus. Indicate the period and cause of development for such pathology.

*Thoracopagus*. Pay attention to accretion in the region of the breastbone. In what period of kymatogenesis does this pathology appear? Give definition for "teratogenic period".

*Diplopagus*. Indicate the period and cause of development for such pathology.

*Anencephaly and acrania*. Pay attention to absence of the brain substance and the bones in the vault of the skull; to prominence of the eyeballs from the orbits, to wide bridge of the nose and low floors of the auricles. In what period of kymatogenesis does this monstrosity appear? Name teratogenic factors.

*Cyclopia*. Describe the macrospecimen paying especial attention to the face of the fetus, note the presence of one orbit with one eyeball. What period of kymatogenesis does this defect develop? Name the causes of kymatopathies.

*Ventricular septal defect of the heart*. Describe the macrospecimen paying attention to the ring aperture in the region of the interventricular septum. Characterize the hemodynamics in this defect.

*Polycystic kidney*. Pay attention to the enlargement of the kidneys, presence of numerous cysts on the surface and in the deep portions of the cortical layer. Describe the cysts: form, size and contents. What organs are injured in polycystosis in addition to the kidney?

*Horseshoe kidney*. Pay attention to accretion of the kidneys beside one of the poles. Describe their outlook and size. Pay attention to clear boundary between the cortical and medullar layers. What is the clinical manifestation of this defect? Name the cause of its development.

*Megaloureter*. Pay attention to the sharply dilated ureter. Name the period of kymatogenesis in which this defect develops. What are clinical manifestation and complication of this defect? What is the outcome?

*Chondrodysplasia*. Describe the macrospecimen. Pay attention to the extreme contraction of the upper and lower extremities, their thickening, enlargement of the fetal head. Pay special attention to the short neck, hypoplasia of the chest and thickening of the tongue. What period of kymatogenesis does this defect develop? What is the prognosis for the life of the child? With what is this defect associated often?

*Herniation of the brain (encephalocoele)*. Describe the macrospecimen. In what period of kymatogenesis does this defect develop?

*Meckel's diverticulum*. Pay attention to the finger-like protrusion of the ileum. Name the condition for development of this defect.

*Cephalhematoma*. Pay attention to accumulation of blood between the periosteum and bones of the vault of the skull. Determine the mechanism of

hemorrhage. What are the maternal causes of entailed child injury? Name the causes of birth injury, which are determined by fetal status.

*Staphylococcal destruction of the lungs.* Describe the macrospecimen paying attention to numerous abscesses under the pleura in the lungs of the newborn. Indicate the possible way of infection penetration to the organism of the newborn. What diseases can be the source of fetal contamination?

*Hyaline membrane disease.* Describe the lung appearance. Pay attention to the changes in the colour, firm consistence. Describe the pulmonary tissue on incision. What are the causes of this pneumopathy? Determine the cause of death.

### **Study, draw and describe the microspecimen:**

# 11 cerebral microfocal hemorrhage in asphyxia (stained with *hematoxylin and eosin*). At low magnification determine numerous small hemorrhage localized perivascularly and presence of perivascular and pericellular edema.

# 12 stasis in cerebral vessels in asphyxia (stained with *hematoxylin and eosin*). At high magnification pay attention to dilatation of capillary lumen, intracapillary aggregation of the erythrocytes. What are the consequences and significance of stasis?

# 15 lungs in hyaline membrane disease (stained with *hematoxylin and eosin*). At low magnification, determine the alveoli, pay attention to homogeneous eosinophilic masses located in the ring-like manner in the respiratory parts. What is the nature of these masses? Describe the mechanism of development of hyaline membrane disease. What is the outcome of the disease?

### **Questions to control basic knowledge**

1. Give the definition for gametopathies.
2. Name the defects of development associated with pathology CNS:  
a)... , b) ... , c) ... .
3. Name distinctive signs for anaemic form of hemorrhagic disease of the newborn: a) ... , b) ... , c) ... d) ... .
4. Name the main signs of Fallot's triad: a) ... , b) ... , c) ... .
5. Name the types of cord attaching to placenta: a) ... , b)... , c)... d) ... .
6. Which of the newborn disease refer to pneumopathy: a) ... , b) ... , c) ... .
7. Name the causes of the fetal labour injury associated with maternal labour ways: a) ... , b) ... , c) ... d) ... .
8. Problem. Jaundice of the skin, signs of the bilirubin encephalopathy in the brain substance, bilirubin infarctions in the kidneys, enlarged liver and spleen have been revealed in dissection of the newborn. His mother has Rh-negative blood. The child died on the third day after birth. What is your diagnosis? Name the form of the disease and cause of death.

*Answers:* 1. Gametopathies are any form of injury of the male or female gamete leading to appearance of heredity diseases and developmental defects; 2. a) anencephaly, b) hydrocephaly, c) porencephaly; 3. a) pallor of the skin,

b) absence of jaundice, c) anaemia of the internal organs; d) insignificant enlargement of the liver and spleen; 4. a) ventricular septal defect of the heart, b) stenosis of the pulmonary artery, c) hypertrophy of the right ventricle; 5. a) central, b) regional, c) membranous, d) eccentric; 6. a) hyaline membrane disease, b) atelectasis, c) edemo-hemorrhagic syndrome; 7. a) rigidity of labour channel tissue, b) curvature of the pelvis, c) tumours of the labour ways, d) oligoamnios; 8. Hemorrhagic disease of the newborn, postnatal jaundice form, bilirubin encephalopathy.

**Questions to control the knowledge:**

1. Definition of the perinatal period, conception about periodisation and regularities of fetal development.
2. Etiology of kymatopathies. Teratogenic terminative periods.
3. Regularities of the kymatopathy pathogenesis.
4. Conception about gametopathies.
5. Etiology, pathogenesis and pathomorphology of the blastopathies.
6. Classification of the embryopathies.
7. Pathology anatomy of the congenital defects of the heart, CNS, alimentary tract, respiratory system, urinary system, muscular system.
8. Etiology, pathogenesis, pathomorphology and prognosis of the infectious and non-infectious fetopathies.
9. Age-specific changes of the placenta. What are developmental defects of the placenta do you know?
10. Main signs of the blood circulation disturbance in the placenta.
11. Name main types of the placentitis. Causes and conditions for their development.
12. Name morphological signs of the fetal immature and overmaturity.
13. Etiology, pathogenesis and pathomorphology of the newborn asphyxia, pneumopathies and labor trauma.
14. Give definition for hemorrhagic disease of the newborn. Etiology, pathogenesis and pathomorphology of the disease.

**Krok questions:**

1. During the operation of the 2-year-old girl in the retroperitoneal area it was found out: hypoplasia of right kidney. Call the most probable period of development of this change:  
 A. *Embryogenesis.\**      C. *Progenesis.*      E. *Late fetogenesis.*  
 B. *Blastogenesis.*      D. *Early fetogenesis.*
2. A 1-year-old child had the following syndrome: flat facial profile, oblique palpebral fissures, epicanthic folds, atrial septum defect, trysomia 21. Described changes are characteristic for:  
 A. *Down syndrome.\**      C. *Klinefelter's syndrome.*      E. *Edward's syndrome.*  
 B. *Patau's syndrome.*      D. *Turner's syndrome.*

3. Autopsy of the newborn showed jaundice of the skin, signs of the bilirubin encephalopathy in the brain substance, bilirubin infarctions in the kidneys, enlarged liver and spleen. His mother is Rh-negative. The child died on the third day after birth. What is your diagnosis?

- A. Hemolytic disease of newborn. \* D. Respiratory distress syndrome  
B. Birth injury. of newborn.  
C. Pneumonia in newborn. E. Edematous hemorrhagic syndrome.

### Terminology

Progenesis, prenatal period, gametopathy, kymatogenesis, blastopathy, embryopathy, fetopathy, teratogenic terminative periods, teratogenic agent, diplopagus, heteropagus, teratoma, craniopagus, thoracopagus, ischiopagus, anencephaly, acrania, microcephaly, hydrocephaly, porencephaly, cyclopia, rachischisis, Fallot's triad, tetrad and pentad, Hirschsprung's disease, meckel's diverticulum, agenesis, atresia, hypoplasia, dysplasia, epispadia, cryptorchidism, hermaphroditism, chondrodysplasia, achondroplasia, cheiloschisis, polydactylia, palatoschisis, micrognathia, hypertelorism, mucoviscidosis, endomyocardial fibroelastosis, placentitis, intervillitis, villusitis, deciduitis, chorioamnionitis, amniochorioiddeciduitis, mortinatus, asphyxia, pneumopathy, pneumonia, labour trauma, cephalhematoma, hemorrhagic disease of the newborn.

### Practical habits and skills

Students are to be able to determine pathological processes in prenatal period basing on morphological changes in gametopathies, embryopathies, blastopathies and fetopathies.

#### Revise the word-building elements:

emryo-	embryo
peri-	around
nato-	delivery
terato-	monster
dys-	bad
hemato-	blood
cephalo-	brain
osteo-	bone
feto-	fetus
hyper-	excessive
hypo-	decreased
-genesis	development
-pathy	disease
-plasia	development
-oma	tumor
-cele	hernia
-osis	disease
-trophy	nourishment

*Навчальне видання*

# **ХВОРОБИ НИРОК, ЧОЛОВІЧОЇ І ЖІНОЧОЇ РЕПРОДУКТИВНИХ СИСТЕМ, ВАГІТНОСТІ ТА ПІСЛЯПОЛОВОГО ПЕРІОДУ. ПРЕ- ТА ПЕРИНАТАЛЬНА ПАТОЛОГІЯ**

***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  
Мирошніченко 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. № 16-33200.

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

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