

ONTÜSTIK-QAZAQSTAN MEDISINA AKADEMIASY «Оңтүстік Қазақстан медицина академиясы» АҚ		SOUTH KAZAKHSTAN MEDICAL ACADEMY АО «Южно-Казахстанская медицинская академия»
Department of Pathology and Forensic Medicine Lecture complex on the subject "Urogenital system in pathology"		63-11-2025 Page 1 of 8

LECTURE COMPLEX

Discipline: "Urogenital system in pathology"

Discipline code: USP 3222

Name and code of the EP: 6B 10115 "Medicine"

Amount of study hours/credits: 30 hours/ 1 credit

Course and semester of study: 3rd year, 6th semester

Lecture length: 2 hours

Shymkent, 2025

ONTÜSTIK-QAZAQSTAN MEDISINA AKADEMIASY «Оңтүстік Қазақстан медицина академиясы» АҚ		SOUTH KAZAKHSTAN MEDICAL ACADEMY АО «Южно-Казахстанская медицинская академия»
Department of Pathology and Forensic Medicine Lecture complex on the subject "Urogenital system in pathology"		63-11-2025 Page 2 of 8

The lecture complex is developed in accordance with the working curriculum of the discipline (syllabus) 6 B 10115 "Medicine" and discussed at the department meeting

Protocol No. 13 from "26" 06 2025 y.

Head of the Department _____

 Sadykova A.Sh.

ONTÜSTIK-KAZAQSTAN MEDISINA AKADEMIASY «Оңтүстік Қазақстан медицина академиясы» АҚ		SOUTH KAZAKHSTAN MEDICAL ACADEMY АО «Южно-Казахстанская медицинская академия»
Department of Pathology and Forensic Medicine Lecture complex on the subject "Urogenital system in pathology"		63-11-2025 Page 3of 8

Lecture No. 1

1. Topic: Pathophysiology of the kidneys. Disorders of the function of glomeruli and tubules

2. Objective: - understanding the issues of etiology and pathogenesis of renal dysfunction

3. Lecture abstracts :

The kidneys are vital organs. The main purpose of the kidneys is to maintain the constancy of the internal environment (homeostasis) of the body .

The kidneys perform their homeostatic functions and form urine through the processes of filtration of plasma components, reabsorption and secretion, as well as the synthesis of a number of substances.

Violation of filtration can be expressed as its decrease or increase, regardless of the volume of fluid entering the body.

Both renal and extrarenal factors can lead to a decrease in filtration volume . Renal causes of decreased filtration include:

- decrease in the number of functioning glomeruli due to their replacement by fibrous tissue, destructive processes in the kidneys;
- decreased permeability of the filter membrane due to the ingrowth of connective tissue, deposition of immune complexes and autoantibodies on it ;
- sclerotic changes in the afferent arterioles and interlobar vessels;
- increased pressure in the cavity of Bowman's capsule due to increased intrarenal pressure due to interstitial edema or obstruction of the tubules and urinary tract.

Extrarenal causes of decreased filtration may include:

- 1) a decrease in systemic blood pressure due to cardiac or vascular failure, blood loss, dehydration; when systolic blood pressure falls below 50 mm Hg , filtration stops completely;
- 2) an increase in the oncotic pressure of blood plasma as a result of an increase in the concentration of proteins, which can occur with increased synthesis (for example, in myeloma), the introduction of protein preparations, or thickening of the blood.

Tubulopathies- these are diseases caused by a violation of the transport functions of the epithelium of the renal tubules due to the absence or qualitative changes of carrier proteins, certain enzymes, receptors for hormones, or dystrophic processes in the tubular wall.

According to etiology, a distinction is made between primary (hereditary) and secondary (acquired) tubulopathies .

Depending on the location of the defect, a distinction is made between proximal and distal tubulopathies .

Glomerular filtration disorders in children are characterized by low renal blood flow and high renal vascular resistance. Phosphate diabetes (hypophosphatemic rickets) is a proximal tubulopathy . The main defect is a decrease in phosphate reabsorption with subsequent hypophosphatemia.

4. Illustrative material:

- presentation of lecture material;
- posters on the topic of the lesson;
- tables, diagrams.

5. Literature: see Appendix No. 1.

6. Control questions (feedback) :

1. What is the etiology and pathogenesis of renal tube and glomerular dysfunction?
2. What are the clinical manifestations of renal tubular and glomerular dysfunction?
3. What is the pathogenesis of hematuria?
4. What is the pathogenesis of proteinuria?

Lecture No. 2

1. Topic : Renal failure

ONTÜSTIK-QAZAQSTAN MEDISINA AKADEMIASY «Оңтүстік Қазақстан медицина академиясы» АҚ		SOUTH KAZAKHSTAN MEDICAL ACADEMY АО «Южно-Казахстанская медицинская академия»
Department of Pathology and Forensic Medicine Lecture complex on the subject "Urogenital system in pathology"		63-11-2025 Page 4of 8

2. Objective: To understand the issues of etiology and pathogenesis of renal failure

3. Lecture abstracts :

Renal failure is a syndrome that develops as a result of impaired renal blood flow, glomerular filtration, and tubular reabsorption and secretion, as well as the concentration capacity of the kidneys. Renal failure is characterized by hyperazotemia, disturbance of the water-electrolyte balance and acid-base equilibrium. Depending on the rate of occurrence and further development, a distinction is made between acute (it occurs suddenly due to acute, most often reversible kidney damage) and chronic (it develops gradually due to progressive irreversible loss of functioning renal parenchyma) renal failure, complete (all functions are impaired) and incomplete (partial), which is characterized by impairment of only some renal functions.

Renal failure can be latent (or compensated), which is revealed during an water-salt load, and decompensated, which is revealed at rest.

Etiological factors causing renal pathology are very diverse.

For educational purposes they are divided into:

- **infectious** (bacteria, viruses)
- **non-infectious** (chemical, mechanical, physical)
- **biological** : (anti-renal antibodies, immune complexes, natural killers and macrophages).

By origin, etiological factors are divided into :

- **primary** (hereditary: mutations of genes that provide kidney function: renal diabetes mellitus, membranopathy, polycystic disease, dysplasia, enzymopathies)
- **secondary** (acquired; they are the most common cause of renal pathology).

Uremia (urination) - a syndrome of acute or chronic autointoxication, developing with severe renal failure as a result of the retention of nitrogenous metabolites (azotemia) and other toxic substances in the body, disorders of water-salt, acid-base and osmotic homeostasis, accompanied by secondary metabolic and hormonal disorders, general dystrophy tissues and dysfunction of all organs and systems.

Kidney failure in children is a pathological condition in which the kidneys partially or completely fail to perform the excretory function. The severity of the child's condition depends on the form of the disease - acute or chronic. ARF can occur in response to a reduced blood volume (hemorrhage or hypovolemia) or too low blood pressure.

4. Illustrative material:

- presentation of lecture material;
- posters on the topic of the lesson;
- tables, diagrams.

5. Literature: see Appendix No. 1.

6. Control questions (feedback) :

1. What are the general provisions, types of renal failure, pathogenesis?
2. What is the classification of renal failure?
3. What are the etiology, classification, pathogenesis of acute renal failure?
4. What are the etiology, classification, pathogenesis of chronic renal failure?

ONTÜSTIK-QAZAQSTAN MEDISINA AKADEMIASY «Оңтүстік Қазақстан медицина академиясы» АҚ		SOUTH KAZAKHSTAN MEDICAL ACADEMY АО «Южно-Казахстанская медицинская академия»
Department of Pathology and Forensic Medicine Lecture complex on the subject "Urogenital system in pathology"		63-11-2025 Page 5 of 8

Appendix No. 1

Literature: primary and secondary

1. Pathophysiology. 2 tomдық. 1-t. okulyk / kazakhtil. room B. A. Zhetpisbaev; ed. V. V. Novitsky. - M.: GEOTAR - Media, 2017. - 640 bet.
2. Pathophysiology. Eki tomдық. 2 volumes: okulyk / kazakhtil. room S. B. Zhutikova; ed. V. V. Novitsky. - M.: GEOTAR - Media, 2018. - 464 b. + el. optical disk (CD-ROM).
3. Nurmuhambetuly, A. Clinical pathophysiology. I - volume: Okulyk Pathophysiology-II on the clinic of medicine and medicine. - 2nd bass. - Almaty: Evero, 2016. - 180b. With.
4. Nurmuhambetuly, A. Clinical pathophysiology. 2 -t. Pathophysiology - 2 zhane onyn klinikalyk medicinadagy manyzdy maselelerine nuskama: okulyk. - 2nd bass. - Almaty: Evero, 2016. - 252 bet.
5. Nurmuhambetuly, A. Clinical pathophysiology. 3 volumes. Pathophysiology - II on the clinic of medicine, manyzdy maselelerine nuskam: okulyk. - 2nd bass. - Almaty: Evero, 2016. - 248 bet.
6. Nurmuhambetuly, A. Pathophysiology. Volume 1: okulyk / Ə. Nurmuhambetuly. - Ond., tolykt. 3-bass - Almaty: Evero, 2015. - 182 bet
7. Nurmuhambetuly, A. Pathophysiology. Volume 2: okulyk / Ə. Nurmuhambetuly. - Ond., tolykt. 4-bass - Almaty: Evero, 2015. - 214 bet
8. Nurmuhambetuly, A. Pathophysiology. Volume 3: okulyk / Ə. Nurmuhambetuly. - Ond., tolykt. 4-bass - Almaty: Evero, 2015. - 216 bet
9. Nurmuhambetuly, A. Pathophysiology. Volume 4: okulyk / Ə. Nurmuhambetuly. - Ond., tolykt. 4-bass - Almaty: Evero, 2015. - 154 bet
10. Pathophysiology: okulyk. 2 tomдық. 1 volume / Kazakh tel. room B. A. Zhetpisbaev; ed. V. V. Novitsky. - 4-bass.ond.tolyk. - M.: GEOTAR - Media, 2017. - 640
11. Pathophysiology: okulyk. 2 tomдық. Volume 2 / Kazakh tel. room S. B. Zhutikova; ed. V. V. Novitsky. - 4-bass.ond.tolyk. - M.: GEOTAR - Media, 2018. - 464 b. + el. wholesale disk (CD-ROM).
12. Pathological physiology. V. 1: textbook for medical universities / ed. A. D. Ado [et al.]. - Almaty: Evero, 2014. - 244 p.
13. Pathological physiology. Vol. 2: textbook for medical universities / A. D. Ado [et al.]. - Almaty: Evero, 2015. - 216 p.
14. Efremov, A. V. Pathophysiology. Basic concepts: textbook / A. V. Efremov, E. N. Samsonova, Yu. V. Nacharov. - M.: GEOTAR - Media, 2010. - 256 p.
15. Frolov, V. A. General pathological physiology: textbook / Rec. educational-method. unit. for medical and pharmaceutical education of universities of Russia. - M.: Publishing house "Higher education and Sciences", 2013. - 568 p.: ill.
16. Pathological Physiology (General and Specific): textbook / V.A. Frolov [et al.]. - 4th ed., trans. and add. - M.: Publishing house "Higher education and science", 2019. - 730 p.
17. Akhmetova, N. Sh. Anatomy, physiology, pathology of the organs of hearing, speech, vision [Text]: a tutorial. - 3rd ed. - Karaganda: AKNUR, 2019. - 192 p.
18. Pathophysiology. In 2 vols. T. 2 [Text]: textbook / ed. V. V. Novitsky, E. D. Goldberg, O. I. Urazova; Ministry of Education and Science of the Russian Federation. - 4th ed., revised, and additional; Rec. State Educational Institution of Higher Professional Education "MMA named after I.M. Sechenov". - M.: GEOTAR - Media, 2012. - 640 p. + email wholesale disk (CD-ROM)
19. Pathophysiology. In 3 volumes. Volume 3 [Text]: textbook / A. I. Volozhin [et al.]; edited by A. I. Volozhin, G. V. Poryadin. - Rec. UMO united. for medical and pharmaceutical education of higher education institutions of Russia as a textbook. - Moscow; Academy, 2006. - 304 p. - (Higher prof. education).
20. Jain, AK Textbook of physiology: textbook. Vol. 1/AK Jain. - 6 th ed. - Nev Delhi: Avichal publishing company, 2015. - 590 p. Title translation: Textbook of Physiology
21. Jain, AK Textbook of physiology: textbook. Vol. 2/AK Jain. - 6nd ed. - Nev Delhi: Avichal publishing company, 2015. - 1121 p. Translation of title: Textbook of Physiology
22. Norris, Tommie L. Porth's Pathophysiology: Concepts of Altered Health States [Text] : textbook / Tommie L. Norris. - 10 nd ed. - [S. l.] : Wolters Kluwer, 2019. - 1573 p. - ISBN 978-1-4963-7759-3 : 48115 Tg. Translation of the title: Porth's Pathophysiology: Concepts of Altered Health States
23. Pathophysiology. Volume 1. : the book for medical institutes / AD Ado [and others]. - Almaty: "Evero", 2017. - 216 p.
24. Pathophysiology. Volume 2. : the book for medical institutes / AD Ado [and others]. - Almaty: "Evero", 2017. - 188 p.
25. Pathophysiology. Volume 3. : the book for medical institutes / AD Ado [and others]. - Almaty: "Evero", 2017. - 323 p.
26. Pathophysiology of Disease: An Introduction to Clinical Medicine. 7rd. ed. McGraw-Hill Education, 2014
27. Kharissova, NM Physiology of the digestive system: teaching textbook / NM Kharissova. - Almaty: Evero, 2016. - 428 p.

Kosymsha Adebietter:

1. Pathological physiology. Also: pathophysiology. Guide to practical classes: textbook / V. V. Novitsky [f. b.]; ed. Bask. V. V. Novitsky, O. I. Urazova; Kaz. tiline aud. S. B. Zhutikova. - M.: GEOTAR - Media, 2014. - 768 bet.s.
2. Urazalina, N. M. Tapsymalary test. II-bolim. Birtektesderttikurdister. - Almaty: Evero, 2014. - 184 bet.
3. Zhautikova, S. B. Mamandandyrlgan pathology physiology courses: oku-adistemelik kuraly / S. B. Zhutikova, E. K. Omirbaeva; KR densaulyk saktau ministerligi; KMMU. - Karaganda: Residential complex "Aknur", 2013. - 268 bet.
4. Zhautikova, S. B. Pathological physiology of the situational situation: ocu-adistemelik kural. - Karaganda: Residential complex "Aknur 2013"
5. Pathophysiology. Tasks and test assignments: a teaching aid / edited by P. F. Litvitsky; Ministry of Education and Science of the Russian Federation. - ; Rec. State Educational Institution of Higher Professional Education "MMA named after I. M. Sechenov". - Moscow; GEOTAR-Media, 2013. - 384 p.: ill.
6. Rose, Alan G. Atlas of pathology. Macro- and microscopic changes in organs: atlas: trans. from English. edited by E. A. Kogan / Alan G. Rose; ed. E. A. Kogan. - M.: GEOTAR-Media, 2010. - 576 p.
7. Klatt, Edward C Robbins and Cotran Atlas of Pathology : textbook / Edward C. Klatt. - 3rd ed. - Philadelphia : Elsevier Saunders, 2014. - 587 p. - ISBN 978-1-4557-4876-1 : 33050.00 Tg. Translation of the title: Robbins and Cotran Atlas of Pathology

Basilymdar electrons:

1. Pathological physiology. Tazhiribelik sabaktarga nuskau [Electronic resource]: oku kuraly = Pathophysiology. Guide to practical exercises: textbook / Kaz. tiline aud. S. B. Zhutikova; ed. V. V. Novitsky. - Electron. text data (63.4MB). - M.: GEOTAR - Media, 2014. - 768 bet. email wholesale disk (CD-ROM)
2. Adam physiology. Dynamics syzbalar atlases [Electronic resource]: okulyk / K. V. Sudakov [reinforced concrete]; Kazak tel. room M.K. Kankozha. - Electron. text data (105MB). - M.: GEOTAR - Media, 2017. - 464b.
3. Pathological physiology. Doszhanova M.P. , - Almaty: Evero, 2015 Central Bank Aknurpress / <https://www.aknurpress.kz/reader/web/2476>
4. Kravtsov V.I. et al. Test tasks on pathological physiology with elements of profiling / Edited by professor V.I. Kravtsov. - Almaty: Evero, 2020. - 116 p. https://www.elib.kz/ru/search/read_book/472/
5. Kravtsov V.I. et al. Test tasks on pathological physiology with elements of profiling / Edited by professor V.I. Kravtsov. - Almaty: Evero, 2020. - 128 p. https://www.elib.kz/ru/search/read_book/471/
6. Kravtsov V.I. et al. Test tasks on pathological physiology with elements of profiling / Edited by professor V.I. Kravtsov. - Almaty: Evero, 2020. - 104 p. https://www.elib.kz/ru/search/read_book/473/

ONTÜSTIK-KAZAQSTAN MEDISINA AKADEMIASY «Оңтүстік Қазақстан медицина академиясы» АҚ		SOUTH KAZAKHSTAN MEDICAL ACADEMY АО «Южно-Казахстанская медицинская академия»
Department of Pathology and Forensic Medicine Lecture complex on the subject "Urogenital system in pathology"		63-11-2025 Page 6 of 8

7. Pathological physiology: volume 2. Okulyk/Kazakh tiline audargan, zhauapt editor Zh.B. Akhmetov. , – Almaty: Evero, 2020 - 200 https://www.elib.kz/ru/search/read_book/91/
 8. Pathological physiology: 1 volume. Okulyk/Kazakh tiline audargan, zhauapt editor Zh.B.Akhmetov., – Almaty: Evero, 2020 - 240 p. https://www.elib.kz/ru/search/read_book/88/
 9. Pathological Physiology: Textbook for Medical Universities. Volume 2. Almaty: Evero, 2020 – 216 https://www.elib.kz/ru/search/read_book/98/
 10. Ado A.D., Ado M.L., Pytskogo V.I., Poryadina G.V., Vladimirova Yu.L. Pathological physiology: textbook for medical universities. Volume 1. Almaty: Evero, 2020 - 248 p. https://www.elib.kz/ru/search/read_book/96/
 11. Ado A.D., Ado M.L., Pytskogo V.I., Poryadina G.V., Vladimirova Y.L. Pathological Physiology: Textbook for Medical Universities. Volume 3. Almaty: Evero, 2020 https://www.elib.kz/ru/search/read_book/100/
 12. Urazalin. Tapsyrmalary test, Profiling of elements of pathological physiology, Boyynsha mamandyktar: 051301-zhalpy medicine, 051302-dentistry. III-bolim. Hemostasis depends on the pathophysiology. Almaty, “Evero” basspasy, 2020, 142 pages. https://www.elib.kz/ru/search/read_book/896/
 13. Urazalina. Tapsyrmalary test. Profiling of elemental pathology physiology, Boyynsha mamandyktar: 051301-zhalpy medicine, 051302-dentistry.II-bolim. Tiptik pathological protsester, Birtectes derttik urdister. Almaty, “Evero” basspasy, 2020, 184 b. https://www.elib.kz/ru/search/read_book/895/
 14. Urazalina.Tapsyrmalary test, Profiling elementerimen birge pathology physiology, Boyynsha mamandyktar: 051301-zhalpy medicine, 051302-dentistry.IV-bolim. Askorytu, bauyr, buyrek, endocrindik zhykke zhuyelerinin pathophysiology. Almaty, “Evero” basspasy, 2020, 204 b. https://www.elib.kz/ru/search/read_book/897/
 15. Ado A.D., Ado M.L., Pytsky V.I. , Poryadina G.V. , Vladimirova Yu.L. Pathological physiology: 3 volume, Okulyk/Kazakh tiline audargan, zhauapt editor Zh.B. Akhmetov. – Almaty: Evero, 2020 – 344 https://www.elib.kz/ru/search/read_book/94/
 16. Kalypty zhane pathology zhagdayyndagy balalar men zhasospirimder gynecologysy. Raisova A.T., Baykoshkarova S.B. , – Almaty: Evero, 2020 Central Bank Aknurpress / <https://www.aknurpress.kz/reader/web/2583>
 17. Norms and pathologies of pediatric and adolescent gynecology. Raisova A.T., - Almaty: Evero, 2020 CB Aknurpress <https://www.aknurpress.kz/reader/web/2584>
 18. Anatomy, physiology, pathology of the organs of hearing, speech, vision. Akhmetova N.Sh., - Almaty: Evero, 2019 CB Aknurpress / <https://www.aknurpress.kz/reader/web/1016>
 19. Mamandandyrgan pathological physiology courses. Zhuutikova S.B., Omirbaeva E.K. , – Almaty: Evero, 2019 Central Bank Aknurpress / <https://www.aknurpress.kz/reader/web/1449>
 20. Kogan, B. M. Anatomy, physiology and pathology of sensory systems: a tutorial / B. M. Kogan, K. V. Mashilov, -Moscow: Aspect Press, 2011, - 384 p. - ISBN 978-5-7567-0560-7. - Text: electronic // Digital educational resource IPR SMART: [site]. - URL: <https://www.iprbookshop.ru/8873.html>
 21. Gerasimova, O. V. Pathology of the main life support systems, Volume 1: study guide / O. V. Gerasimova, - Samara: REAVIZ, 2009, - 143 p. - Text: electronic // Digital educational resource IPR SMART: [site]. - URL: <https://www.iprbookshop.ru/10144.html>
- Pathological physiology: theoretical course = Pathological physiology: theoretical course : study guide / E. V. Kulikov, Yu. A. Vatnikov, V. I. Parshina, V. M. Byakhova. - Moscow : Peoples' Friendship University of Russia, 2018, - 92 p. - ISBN 978-5-209-08472-3. - Text : electronic // Digital educational resource IPR SMART : [site]. - URL: <https://www.iprbookshop.ru/91045.html>