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ZAPORIZHZHIA STATE MEDICAL UNIVERSITY
DEPARTMENT OF UROLOGY

A. O. Gubar

UROLOGY

Collection of methodological recommendations of practical classes for teachers preparing 4th year students of medical faculties (english division)

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In the collection of methodological recommendations for teachers in preparation for practical classes, methodological developments for eight topics in the discipline "Urology" according to the work program are collected.

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CONTENTS

ПЕРЕДМОВА

Мета збірника методичних рекомендацій для викладачів до підготовки практичних занять з дисципліни «Урологія» IV курсу медичного факультету - це вірно спрямувати учбовий процес в лоні послідовності викладення навчального матеріалу, його об'єму, часу, та розкрити сучасні підходи до організації навчального процесу, підготовки матеріалів та методичного забезпечення для практичних занять з урології і організації самостійної роботи студентів на кафедрі.

Поліпшення роботи викладачів з об'ємними керівництвами з урології та спеціальною літературою за окремими їх розділами при відборі навчальних матеріалів для підготовки до практичних занять у збірнику для до кожної теми розроблені структура теми, дидактичні питання, алгоритми вирішення практичних завдань, ситуаційні та тестові завдання, надана тематична термінологія та рекомендована література. Методичні розробки сформульовані доступною мовою з використанням професійної медичної термінології.

Збірник методичних рекомендацій має практичну спрямованість, розрахований на викладачів вищих медичних закладів і повністю відповідає вимогам «Положення про організацію навчального процесу у ЗДМУ» (2015р) та робочій програмі за дисципліною «Урологія».

Structure of studying discipline "UROLOGY"

The name of section, subsections.and themes.	Number of hours					
	Day form					
	total	included				
		l	p	h	lab	ind
1	2	3	4	5	6	7
Section 1 U R O L O G Y						
Subsections **1. CLINICAL ANATOMY, PHISIOLOGY, METHODS OF INVESTIGATION FOR URINARY AND MALE SEXUAL SYSTEM ORGANS, ANOMALIES OF UROGENITAL SYSTEM.**						
theme 1 Anatomy and physiology of urogenital system. Anomalies of urogenital system. Semiotic of urological diseases.	12 3	 1	 2	12	-	-
theme 2. X-ray, radionuclide, computed tomography, ultrasound, instrumental methods of investigation for urological patients.	14		2	12	-	-
Total for subsections 1	29	1	4	24	-	-
Subsections **2. NONSPECIFIC AND SPECIFIC INFLAMMATIVE DISEASES OF UROGENITAL SYSTEM. STONE DISEASE. HYDRONEPHROSIS.**						
theme 1. Acute pyelonephritis. Chronic pyelonephritis.	4,5	0,5	4		-	-
theme 2. Cystitis, prostatitis, uretritis, cavernitis, epididimitis. Pyonephrosis. Retroperitoneal fibrosis, acute paranephritis. Tuberculosis of urogenital system.	8 12		4	4 12	-	-
theme 3. Stone disease, hydronephrosis. Acute and chronic kidney insufficiency	4,5 10	0,5	4	 10	-	-
Total for subsections 2	39	1	12	26	-	-
Subsections 3. TRAUMATIC INJURIES AND TUMORS OF UROGENITAL SYSTEM. ACUTE AND CHRONIC KIDNEY INSUFFICIENCY						
theme 1. Traumatic injuries of urogenital system.	6	2	4		-	-
theme 2 Tumors of urinary and male sexual system. Adenoma and prostate cancer	6 4	2	4 4		-	-
Total for subsections 3	16	4	12		-	-
Subsections 4. URGENT AID IN UROLOGICAL DISEASES.						
theme 1. Renal colic, acute urinary retention, anuria, trauma of kidney, urinary bladder, urethra and testis. **hours**	4 2	-	4 2		-	-
Total for subsections 4	6		6		-	-
Total hours	90	6	34	50	-	-

METHODICAL DEVELOPMENT OF A PRACTICAL LESSON

TOPIC: SEMIOTIC OF UROLOGICAL DISEASES.

Place - study room, wards.

Actuality of the theme:

Actuality of the theme is caused by the fact that without knowledge of normal structure of urogenital system, its normal functioning, it is impossible to define and correctly interpret changes of its pathology. 10-14% of children are born with various anomalies of organs of urogenital system. Among the patients of urologic profile such patients make up more than 12%, and in child age - 37%. Bearing in mind that defects of development of organs of urogenital system are the most important factors of many urologic diseases, actuality of this theme for the doctors of various profiles is beyond any doubts.

Aim of the lesson:

- ✓ To analyze peculiarities of clinical manifestation of anomalies of development or urogenital system organs (patients, materials of the lectures, text-book).
- ✓ To define basic anatomic-topographic and clinical aspects of upper urinary the basis of knowledge of anatomy, physiology, histology, pathologic morphol (tables, material of text-book).

General aim:

To learn symptoms and principles of diagnostics of congenital defects of urogenital system, to define them in early child age and to refer a patient to urologist with the aim of timely correction.

Student must know:

- ➢ Anatomical peculiarities of structure of urogenital system organs.
- ➢ Classification of anomalies of development of urogenital system.
- ➢ Clinical manifestations, diagnostic algorithm, complications, principles of treatment. Students must be able to:
- ➢ Analyze anatomical peculiarities of structure of urogenital system organs (tables, material from text-book).
- ➢ To explain mechanism of urination (material of lectures, text-book).
- ➢ To interpret clinical anatomy, physiology and methods of investigation of urogenital system organs (material of lectures, text-book).

The purpose of the study:

- ✓ To make plan of examination of a patient suspected to have defects of ur system (materials of lectures, text-book).
- ✓ To make treatment plan (materials of lectures, text-book).
- ✓ Practical skills which are to be mastered at practical class:
- ✓ Physical examination of kidney (inspection, palpation, Paster symptom)
- ✓ Physical examination of the urinary bladder (inspection, palpation, percussion).

II. The final results of mastering the topic

In accordance with the requirements of the master's level standard, students after studying this topic should:

Know:

Anatomy: To describe anatomy of urogenital system organs

Physiology: To define function of urogenital system organs
Histology: To know histologic structure of urogenital system
Topographic anatomy: To explain topography of urogenital system
Pathologic anatomy: To analyze pathologic changes of urogenital system
Pathologic physiology: To analyze pathologic changes of urogenital system.

Have to do:

Practical skills which are to be mastered at practical class.
Physical examination of kidney (inspection, palpation, Pasternatsky symptom).
Physical examination of the urinary bladder (inspection, palpation, percu).

Have specialized (subject) competences:

Roentgenology and medical radiology: To comment X-ray Films and scintigrams.

Practical skills that are assigned to the practical training:

Palpation of the urethra and organs of the scrotum.
Palpation of the prostate.

Have specialized (subject) competences

Special (professional, subject) competencies					
1.	The ability to make a provisional clinical diagnosis of an illness.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children. To know the standard examination methods and diagnostic algorithms. To know the algorithms of finding the guiding symptoms and syndromes (according to the list 1) and of making provisional and clinical diagnoses (according to the list 2). To know the methods of laboratory testing and instrumental examination (according to the list 3). To have the knowledge of patient's state evaluation.	To know how to make a physical examination of a patient; to know how to take a reasoned decision concerning finding a guiding clinical symptom or syndrome; to know how to make a provisional diagnosis (according to the list 2); to know how to prescribe a laboratory test or an instrumental examination of a patient (according to the list 3) by using standard methods.	To keep medical records of a patient (an outpatient/inpatient card, an individual child development card) basing on the practice guidelines.	To be responsible for taking reasoned decisions and actions that concern making a provisional diagnosis of an illness keeping to the ethical and legal rules.
2.	The skills of gathering information about a patient.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the methods and standard schemes of	To know how to talk to a patient (including a child and his/her parents) basing on the algorithms and standards, how to examine a patient using standard methods. To know how to examine	To make appropriate medical records concerning the health status of an adult or a child or prenatal development of a fetus.	To be responsible for a qualified information gathering that includes an interview, questioning, examination, palpation, percussion of organs and systems and

		questioning and examining patients of different age groups. To know the methods of prenatal development evaluation. To know the stages and methods of psychomotor and physical development evaluation in pediatrics.	psychomotor and physical development of a child. To know how to evaluate health status of a person (including one of a child).		timely evaluation of a person's health status, psychomotor and physical development of a child and prenatal development of a fetus. To be responsible for responding appropriately.

III. Term of studies 2 acad. hours.

IV. Plan of the class:

Stages of the lesson	**Time**	**Equipment**
1.Organisation part of the visit control. Introducing students to the topic, purpose and plan of the lesson. Definition of evaluation criteria.	5	Training journal
2.Introduction: The teacher's control of the basic level of students' knowledge on this topic on the basis of their independent preparation for the lesson by the method of oral questioning or input test control (a list of questions or test samples in section V).	10	Tests, standards,
3. The main part: Studying, taking notes, students discussing and explaining by the teacher the most important terms, concepts, certain problematic issues of a topic using methodological recommendations for students. Analysis and assimilation of the graphological structure of the topic. Briefing. Performing a practical task according to options and forms (group and individual). Verification and evaluation of completed tasks.	50	Textbook, lecture notes, guidelines, medical history, patient demonstration
4. Self-student work: Performing individual situational tasks according to the options proposed by the teacher. Individual control of decision results.	10	Situations of tasks, educational analyzes. training journal
5. The final part: Final test control of knowledge and skills on the topic. Grades for each student.	15	Training journal
Homework.		
academic break	10	
90 minutes together		

STRUCTURE OF THE LESSON:

Succession of actions	Oriented fundamentals of actions	Self-control
Complaints and anamnesis	Localization and character of pain, presence of symptoms of lower urinary ways, time of onset of first signs of	

	disease, their further development, presence of urinary system diseases in family history, if disorders of alimentary tract, thirst, dryness in the mouth elevation of arterial pressure, elevation of temperature, fever were present	
Objective examination	To assess state of patient's severity (pulse, BP, respiratory rate), state of integuments. On inspection of abdomen to assess symmetry, if protrusion is present. To inspect external genital organs: presence of anomalies. To perform abdominal palpation of patient, lying on his back, side, while eating, in presence of palpable formations – to assess their sizes, consistency, tenderness, mobility. To perform percussion over formation, to define presence of tympanitis or dullness. To define Pasternatsky's symptom	
Evaluation of lab.data	To pay attention to changes in blood analysis, content of urea and creatinine. Interpret general analysis of urine, bacteriologic analysis of urine	Anemia, leukocytosis, ESR. Type of causative agent, sensitivity
Evaluation of X-ray results, USI	Presence of shadows of X-ray contrast calculi on plain urogram and excretory urograms, assess contours and sizes of kidneys, state of abdominal system. On cystourethrograms – contours of urinary bladder, urethra.	Presence of ureterohydronephrosis. Trabecularity, enlargement of urinary bladder volume, filling defects, refluxes, diverticuli.
Instrumental studies	Cystoscopy. Urethroscopy.	Capacity of bladder, trabecularity, residual urine, tumors, calculi. Walls, strictures, valves.
Other studies	Uroflowmetry	
Diagnosis and treatment	On the basis of the data obtained – to make diagnosis, possible complications. To make plan of treatment.	

V. List of control questions

1. Theoretical questions:
2. Anatomical structure of kidney.
3. Structural unit of kidney
4. Topical skeleton of kidney.
5. Topography of kidney.
6. Renal vessels.

7. Topography of ureters.
8. Topography of urinary bladder.
9. Function of kidney.
10. Function of ureters.
11. Function of urinary bladder.
12. Anomalies of kidneys.
13. Anomalies of ureters.
14. Anomalies of urachus.
15. Anomalies of urinary bladder.
16. Anomalies of urethra.

VI. Graphological structure of the topic

Basis tasks	Directions	Answers
Etiology of polycystic renal disease	To name basic etiologic factors of polycystic renal disease	Disorders of confluence of direct and convoluted parts of tubules in embrional period
Clinical picture of the disease	To name basic symptoms of disease	Pain in the lumbar area, pyuria, hematuria hypertonia
Diagnostics	To give list of basic diagnostic methods	Palpation of kidneys excretory urography, USI, CT, MRT
Differential diagnostics	To make differential diagnostics against other diseases	Renal tumors multicystosis hydronephrosis, pyonephrosis
Treatment	To make typical treatment scheme	Diet regimen, anti inflammatory means hypotensive means desintoxication

VII. The most important terminological concepts and theoretical issues of the topic. Contents of the lesson.

Anatomy

Kidneys – pair organ, located in the upper portion of retroperitoneal area, they are covered with the following membranes: fibrous capsule, perirenal fat, pre- and supra-peritoneal Gerout's fascias.

Nephron is a structural unit of kidney. Structure of the nephron: glolmerular capsule (Shumliansky-Bowman's) and capillary glomerulus. Convoluted and direct canaliculus of the I order proceeds further, Henle's loop, direct and convoluted canaliculus of the II order, which falls into collecting tubule. Collecting tubules fall into renal calices. Vascular net of glomerulus is presented by afferent glomerular arteriole, which disintegrates into capillary net, forming renal glomerulus. Efferent arteriole comes out of glomerulus, also disintegrating into capillary net, which envelops renal tubules.

5 segments are distinguished in each kidney, they are: upper, upper anterior, lower anterior, lower and posterior. Renal hilus, transient into renal sinus is located on the inner surface. Big and small renal calices, renal pelvis, blood and lymphatic vessels, nervous fibers, fatty tissue are located in the renal sinus.

At renal hilus there located renal pedicle with renal pelvis, located posteriorly, pelvis-urinary segment and initial portion of the ureter, a little higher and at the front – renal artery, and further to the front and higher – renal vein.

Posterior surface of the kidney is adjacent to the lumbar portion of the diaphragm, quadrate muscle, lumbar muscle of the abdomen, major lumbar muscle. Pleural costal-diaphragm sinus is located behind upper pole of the kidney. Upward, somewhat medially to the front from upper pole, adrenal gland is located.

Liver, liver portion of the colon, descending part of the duodenum are adjacent to the right kidney in front. From these organs kidney is separated by parietal layer of the abdomen, pre-renal fascia and loose fatty tissue. Spleen, fundus of the stomach, body of pancreas gland, splenic part of colon are adjacent to the left kidney. Vertebrae are located on the medial sides of the both kidneys. Aorta is located at the front and in the left side from the skeleton, inferior vena cava is in the right side. Renal arteries come off aorta. Lower inferior adrenal arteries come off upward from renal arteries, urethral arteries come off downward. Renal veins fall into inferior vena cava.

Lymphatic vessels form two systems - superficial (in fibrous capsule) and deep (in renal parenchyma). Outflow of lymph from the right kidney goes into lateral-caval, retrocaval and aorta-caval lymphatic glands. Outflow of lymph from the left kidney – into retro-aortal, lateral-aortal, and pre-aortal lymphatic glands.

Renal pelvis is the reservoir into which renal calices are opened. Big and small calices are distinguished. Small calices may be from 4 to 20 in number, more often - 6-8, big ones are 2-4 in number.

Ureter – pair tubular organ, removing urine from kidney into urinary bladder.

Wall of ureter is composed of three parts: epithelial, muscular and adventitial.

Ureter has three narrowings: in outlet from renal pelvis, at the site of interlacing with iliac vessels, at the site of falling into urinary bladder. Upper part of ureter is supplied with blood by ureteric branches of renal, and testicular arteries, middle part – by branches of aorta, lower part – by branches of middle rectal and inferior urethral artery. Veins of ureter fall into testicular and internal iliac vein. Lymphatic vessels fall into lumbar and internal iliac lymphatic glands.

Urinary bladder performs reservoir function. Apex, body and fundus is distinguished in the urinary bladder. In the area of the fundus Leutaud's triangle is located. Wall of the urinary bladder is composed of mucous membrane, sub-mucous layer of connective tissue, three-layered muscular membrane, serous and adventitial layer. Arterial blood flow is carried out from the system of the internal iliac artery. Outflow of venous blood is carried out into venous interlacing of the urinary bladder and internal iliac veins, that of the lymph - into internal, external iliac, obturative and partially into sacral lymphatic glands.

Innervation of the urinary bladder is performed by inferior sub-peritoneal sympathetic interlacing and pelvic internal parasympathetic nerves.

Physiology

Kidney is a complex organ of urinary system. It provides urination and excretion of metabolic exchange products, preserves acid-base and water-saline balance of the organism, maintains and regulates osmotic and arterial pressure, erythropoiesis, and performs antitoxic function as well.

So, kidney is an important organ, its multiple functions are directed to achieve a single aim – maintaining of homeostasis or continuity of inner environment of the organism.

Extra-renal urinary ways execute transport of urine from the upper portions into lower ones at the expense of their subsequent active dilatation and contractions.

From collecting tubes urine comes into calices by 2 stages: period of filling and period of emptying into renal pelvis. Evacuation of urine from the renal pelvis into urethra occurs by portions.

Activity of the urinary bladder should be considered as accumulation of urine in the urinary bladder, its retaining and evacuation outside through the urethra. The main condition of accumulation of urine in the bladder is closed lumen of internal urethral orifice.

VIII. Instructions and explanations on implementation practical assignment (sample typical task).

1. Extrophy of urinary bladder is:
Absence of its anterior wall and anterior abdominal wall Sac-like protrusion of bladder wall
- Stricture of internal urethral orifice

1) In male patient, aged 19 years pain developed in the left iliac-inguinal area. Objectively:
- tumor-like formation, size - 11x7 cm, elastic, moderately tender is palpable. What anomaly of development is it? What is it confirmed by? Is laparotomy without urologic examination justified in this case?
Diagnosis: iliac-sacral dystopia of the left kidney. Excretory urography, USI is not justified.

2) Male patient, aged 32 years complains of elevation of arterial pressure, weakness.
Objectively: in both epigastric areas painless humpbacked tightly-elastic formations are palpable. On laboratory investigation: signs of chronic renal insufficiency, anemia. What is initial diagnosis? How is to be confirmed? Against what disease differential diagnosis should be carried out?

Diagnosis: polycystic renal disease. USI, plain urography, CT. Against tumors, multiple renal cysts.
IX. Tasks for independent work of students (examples of situational problems and their solutions)
In infant formation of red colors, of round form are observed over the pubis. On examination: urine is excreted by kidneys from both orifices, located in the lower part of formation. What is developmental anomaly? What age surgery is indicated, its variants? Recommendations after surgery?

Answer: bladder extrophy. Surgery at the age of 1 year and later. Transplantation of bladder triangle into rectum. After surgery to monitor urea and creatinine levels, body temperature.

IX. Tasks for independent work of students (examples of situational problems and their solutions)

In infant formation of red colors, of round form are observed over the pubis.
On examination: urine is excreted by kidneys from both orifices, located in the lower part of formation.
1) What is developmental anomaly? What age surgery is indicated, its variants? Recommendations after surgery?

Answer: bladder extrophy. Surgery at the age of 1 year and later. Transplantation of bladder triangle into rectum. After surgery to monitor urea and creatinine levels, body temperature.

2) Boy, 3 years of age is restless on each urination, urination with tension. Therewith, in the area of penile balanus – mace-like widening. In anamnesis: frequent inflammatory processes (balanitis, balanopostitis). Diagnosis: what complications of this developmental defect may develop? Optimal age for surgical intervention?

Answer: phimosis. Complications: paraphimosis, balanitis, balanopostitis, sometimes - ureterohydronephrosis. Preventive measures: to stretch external orifice of prepuce of penis, Rozer's surgery, circular excision of prepuce.

X. Control of knowledge (test theme base for variants)

1. What are the clinical signs typical to urological diseases?

a) pain in hypogastric region
b) headache
c) subfebrile temperature
d) spasmodic sharp pain in the kidney region
e) burning pain in the lumbar region

2. Anuria is characterized by:
a) frequent calls for urination
b) urination by drops of urine
c) suprapubic pain
d) palpable urinary bladder
e) absence of urine in the bladder

3. Chronic urinary retention is characterized by the presence of residual urine:
a) yes
b) no
c) only in case of heart insufficiency
d) only in case of coma
e) in case of stimulated medicamental diuresis only

4. Patient of 30 years old suddenly appeared spasmodic pain in the left lumbar area, irradiating in external genitalia, vomiting. The abdomen wall is not irritated, soft, left kidney area is very painful, urinations are frequent, with gripes/colic. What kind of disease is supposed?
a) intestinal obstruction (ileus)
b) left side renal colic
c) mesenteries vessels thrombosis
d) ectopic pregnancy
e) fecal obstruction

5. The urine samples for hidden leukocyturia include:
a) general urinalysis
b) Nechiporenko urine test
c) Zimnitsky urine test
d) urine bacterioscopy
e) bacterial urine test

6. Concentration ability of the kidneys in Zimnitsky test is estimated on:
a) the amount of daily urine output
b) the amount of 24 hours diuresis
c) the difference between the maximal and minimal urine specific gravity
d) calculating the average of daily urine density value
e) Zimnitsky test is not indicated for measurement of concentration ability of the kidneys
7. Ischuria (urinary retention) is a result of:
a) urinary tract injury
b) urinary tract inflammation
c) kidney's tumor
d) benign prostatic hyperplasia
e) this condition is not exist

8. Samples for hidden leucocyturia in urological patients are prescribed for:
a) normal amount of leukocytes in urinalysis
b) the amount of leukocytes in urinalysis is increased up to 1/3 - ½ and more

c) a slight increase in the number of leukocytes in urinalysis
d) this analysis is never prescribed
e) prescribed in all cases

9. Pathological ("true") bacteriuria is defined as:
a) 105 CFU/ml
b) 5×104 CFU/ml
c) 104 CFU/ml
d) less than 103 CFU/ml
e) slight increase of uropatogens

10. What parameters of Reberg-Tareyev urine test is the most valuable?
a) glomerular filtration rate
b) serum creatinine level
c) reabsorption level
d) daily urine output
e) endogenous creatinine clearance rate

11. What indicators characterize filtration kidney function?
a) blood protein
b) blood creatinine
c) blood potassium and sodium
d) the blood bilirubin
e) blood calcium level

12. Erythrocyturia occurs only when:
a) urolithiasis
b) urinary bladder tumor
c) kidney tumor
d) it may be a sign of many urological diseases
e) nephroptosis

13. Is the presence of active leukocytes in the urine and Sternheimer-Malbin urinary stain are the evidence of pyelonephritis activity?
a) no
b) yes
c) no, if their number reaches 2%
d) yes, if their number is 5%
e) yes, if their number reaches 10%

14. How much protein may be found in urinalysis?
a) 1.0 g / l
b) 0.033 g / l
c) 0,066-0,099 g / l
d) 0.99 g / l
e) 0.33 g / l

15. What is a normal erythrocyte count in non-pathological urinalysis?
a) 0 – 1 RBCs/HPF (red blood cells per high power field, HPF)
b) 5 - 10 RBCs/HPF
c) 10 - 15 RBCs/HPF
d) lots of RBCs

e) 10 - 20 RBCs/HPF

16. Is it possible to provide excretory urography to examine kidney function in patient with duplex collecting system?
a) yes
b) no
c) urography does not determine kidney function
d) it studies kidney function in case of diuretic drugs administration
e) it studies kidney function in case of excessive fluid intake

17. What are the best intravenous pyelography time points to examine upper urinary tract anatomy if kidney function is not impaired?
a) 90 - 120 min.
b) 1 and 2 minutes
c) 5 - 15 minutes
d) 2 - 120 minutes
e) 40 and 50 seconds

18. Is it possible to obtain indirect signs of nephrogenic hypertension if intravenous urography performed at 3, 5, 15, 45 minutes?
a) no
b) yes
c) possible with blood pressure within 150/100 mm Hg
d) possible with blood pressure within 200/110 mm Hg
e) possible with blood pressure within 250/120 mm Hg

19. What method is the best modality to study renal function in urological patients?
a) excretory urography (intravenous pyelography)
b) radionuclide kidney renography
c) ultrasonography
d) retrograde pyelography
e) infusion intravenous pyelography

20. The kidneys are palpable in orthostatic position. What urography modification will you provide?
a) infusion intravenous pyelography
b) orthostatic intravenous pyelography
c) compression intravenous pyelography
d) pharmacourography (using furosemide)
e) serial intravenous pyelogram

XI. Methodological support:

1.Methodical recommendations for students on this topic
2.Theses of the lecture on this topic
3. Set of situational tasks
4. A set of tests on the topic of options
5. Schemes and tables
6. Devices and equipment for practical work

XII. Recommended Books:

A) Basic:

1. Urology. E.M.Shimkus,S.E.Shimkus./Simferopol, IAD CSMU, 2005.
2. Radiation oncology physics: a handbook for teachers and students international atomic energy agency Viena, E.B. Podgorsak Technical Editor.
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6. Pasiechnikov, S., Saidakova, N., & Kuznetsov, V. Results of the complex systemic prophylaxis against postoperative infectious inflammatory complications in patients with benign prostatic hyperplasia. Urology. 2014.- (3), 5-11.
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8. Chernenko, V., Chernenko, D., Klyus, A., & Shylo, V. Clinical efficacy of the combined therapy of patients having urolithiasis using the biologically active additions (BAD) "Prolith". Urology. 2011.- (1), 27-32.
9. Kogan, M., Naboka, Y., Ibishev, K., Gudima, I., & Naber, K. Human Urine Is Not Sterile - Shift of Paradigm. Urologia Internationalis. 2015.
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METHODICAL DEVELOPMENT OF A PRACTICAL LESSON

TOPIC: X-RAY, RADIONUCLIDE, COMPUTED TOMOGRAPHY, ULTRASOUND, INSTRUMENTAL METHODS OF INVESTIGATION FOR UROLOGICAL PATIENTS.

Place - study room, wards.

Actuality of the theme:

One of the main places in daily urological practice is the instrumental and endovesical inspections of the urinary tract. The instrumental methods sometimes complete the diagnostics of many urological diseases. Ultrasound techniques have taken a leading role in the diagnostics and treatment of urological diseases.

Final anatomical and physiological information for correct topical justification of urologic diagnosis and choice of the most optimal treatment tactics is obtained by means of roentgenologic and radioisotope methods of investigation. On the other hand a great choice of roentgenologic and radioisotope methods of examination of urologic patients causes the necessity of special attention paid to mastering this theme.

I. Educational aims.

To elucidate role and place of roentgenologic and radioisotope methods of investigation in diagnostics of diseases of the kidneys, urinary tract and male genital organs, considering indications and contraindications to perform a number of investigations independently, to timely refer patients to specialized treatment-diagnostic subunits.

Learn the basic ways of instrumental, endoscopic and ultrasound examination of the patients. Explain the role of these methods in the diagnostics and treatment.

Theoretical questions:

- ✓ Catheters - types of application.
- ✓ Bougie - types of appliation.
- ✓ Urethroscope - types of application, indications and contraindicationsto endoscopy.
- ✓ Cystoscope - types and application.
- ✓ Chromocystoscopy.
- ✓ Catheterization of ureters, technique of usage, indications and contraindications, complications. Their prevention.

II. The final results of mastering the topic

In accordance with the requirements of the master's level standard, students after studying this topic should.

Know:

- ➢ roentgenologic anatomy of urogenital system;
- ➢ succession of roentgenologic investigation while suspecting diseases of kidneys and those of urinary bladder;
- ➢ possibilities of diagnostics of plain urography and roentgen-contrast means of investigation;
- ➢ up-to date roentgen-contrast agents, which are used for visualization of urinary tract;
- ➢ indications and contraindications concerning various roentgen-contrast methods of investigation of urinary system;
- ➢ indications to up-to date radiologic methods of investigation and their possibilities in diagnostics.
- ➢ The main types of urological instruments.
- ➢ The rules of usage of the urological instruments.
- ➢ Indications and contraindications of the instrumental inspections.

- The place of cystoscopy in ascertainment of factors of dysuria, hematuria.
- The value of catheterization of ureter, kidney bowls in renal colic and treatment of acute pyelonephritis.
- The place of ultrasound in the diagnostics of urological diseases.
- The use of ultrasound for biopsy, conducting the endourologicalinterventions
- The use of ultrasound in urologic practice
- Biopsy of kidney, prostate and bladder.

The student must be able to:

- ✓ prepare theinstruments for use (examples of instruments).
- ✓ To carry out the bladder catheterization (on a mannequin).
- ✓ Explain the cystoscopical pictures (atlas).
- ✓ Interpret the data of ultrasound of the kidney, the bladder, the prostate (set of X-ray images).
- ✓ give first medical aid in case of idiosyncrasy to roentgen-contrast substances containing iodine (set of contrast materials and instruments);
- ✓ on the plain urogram to define contours of kidneys, edge of lumbar muscle, shadows of true urinary calculi and false ones (phleboliths, calcareous lymphatic glands, etc.) (set of images);
- ✓ to calculate necessary amount of contrast fluid, taking into account patient's weight to make excretory urography (set of situation tasks);
- ✓ to perform retrograde cystography (on lay figure);
- ✓ to interpret roentgenograms in contrast means of investigation (excretory urography, retrograde ureteropyelography, renal angiography, various types of
- ✓ cystography, urethrography) (set of images);
- ✓ to do assessment of separate function of the kidney by data of radiologic investigations (collection of tests).

Have specialized (subject) competences

3.	The ability to evaluate the results of laboratory tests and instrumental examination.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the standard methods of laboratory tests and instrumental examination (according to the lest 4).	To know how to analyze the results of laboratory tests and instrumental examinations and evaluate the information about the diagnosis of a patient using these results (according to the list 4).	To prescribe reasonable laboratory tests and instrumental examinations and evaluate their results (according to the list 4).	To be responsible for taking decisions concerning the evaluation of the results of laboratory tests and instrumental examinations in different age groups of children.
4.	The ability to diagnose the emergency cases.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups and standard methods of examining patients (at home, in the street, in a medical institution) under the	To know how to evaluate a person's status and make a diagnosis (according to the list 3) by taking a reasonable decision using the standard methods under the circumstances of lacking information.	To take a reasonable decision concerning the evaluation of a person's condition, diagnosis and taking necessary medical measures depending on the person's condition sticking	To be responsible for the timely and effective medical measures of emergency condition diagnosing.

		circumstances of lacking information.		to the corresponding ethic and legal rules under any circumstances. To fill in the appropriate medical records.	
5.	The ability to fill in the medical records.	To know the system of the official documents circulation in doctor's and pediatrician's professional activity including modern information technologies.	To know how to find a source and location of the necessary information depending on its type. To know how to process the information and analyze it.	To get the necessary information from a certain source and make corresponding conclusions basing on its analysis.	To be responsible for the full and qualified information analysis and for the conclusions made basing on it.
6.	The ability to choose an optimal radiological investigation for different organs and systems.	To know the basic radiological investigation, the main advantages and disadvantages of every radiological investigation.	To know how to choose an optimal radiological investigation for different organs and systems .	To make one's own conclusions on the chosen radiological investigation and represent them to a patient, his/her parents and other specialists.	To be responsible for the reasonable prescription of a radiological investigation and choosing an optimal radiological investigation for different organs and systems.
7.	The ability to define indications and contraindications of a radiological investigation.	To know the main indications and contraindications of each radiological investigation, the main advantages and disadvantages of every radiological investigation.	To know how to define indications and contraindications and choose an optimal radiological investigation for different organs and systems.	To make conclusions based on analyzing and processing of the information gathered by using different radiological investigation.	To be responsible for qualified and timely processing and analyzing of the information.
8.	The ability to master the basic radiological investigations.	To know the basic procedures of all the radiological investigations as well as their imaging principles.	The ability to find a source of necessary information depending on its type. The ability to process the material and analyze the information.	To make conclusions based on analyzing and processing of the information gathered by using different radiological investigations.	To be responsible for qualified and timely processing and analyzing of the information.
9.	The ability to interpret X-ray images, tomographic images, MRI scans, ultrasonic scans, scintiscans.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups and principles of diagnostic imaging.	To be skilled in analyzing the diagnostic images: the X-ray images, tomographic images, MRI scans, ultrasonic scans, scintiscans.	To make conclusions based on analyzing and processing of the information from the X-ray images, tomographic images, MRI scans, ultrasonic scans, scintiscans.	To be responsible for qualified and timely processing and analyzing of the information from the diagnostic images.
10.	The ability to characterize the radiologic images	To have a specialized knowledge of humans, their organs and	To be skilled in analyzing the diagnostic images	To make conclusions based on analyzing and	To be responsible for qualified and timely processing

	of different pathology.	systems, anatomical and physiological peculiarities of children of different age groups, pathologic anatomy and physiology and principles of diagnostic imaging.	obtained by using different radiological investigations.	processing of the information from the X-ray images, tomographic images, MRI scans, ultrasonic scans, scintiscans.	and analyzing of the information from the different types of diagnostic images.
11.	The ability to analyze the skialogic pattern of an X-ray image, CT and MR scans, ultrasonic and Doppler scans.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups, pathologic anatomy and physiology and principles of diagnostic imaging.	To be skilled in analyzing the diagnostic images obtained by using different radiological investigations.	To make conclusions based on analyzing and processing of the information from the X-ray images, tomographic images, MRI scans, ultrasonic scans, scintiscans.	To be responsible for qualified and timely processing and analyzing of the information from the different types of diagnostic images.

Interdisciplinary integration

Courses	To Know	Ability
Previous: Anatomy Physiology Pathological anatomy Radiation diagnostics	Anatomy of the kidney, pelvic anatomy,male genitals. Physiology of the kidney, the bladder, the act of urination. Methods of ultrasonic examination	Will be able to interpret the data of ultrasound of the kidney, the bladder, prostate
Intrasubject integration	Placing uretroscopes, cystoscope: plain, operational, ultrasonic in urology	will be able to distinguish endoscopes for their appointment

III. Term of studies 2 acad. hours.

IV. Plan of the class:

Stages of the lesson	**Time**	**Equipment**
1.Organisation part of the visit control. Introducing students to the topic, purpose and plan of the lesson. Definition of evaluation criteria.	5	Training journal
2.Introduction: The teacher's control of the basic level of students' knowledge on this topic on the basis of their independent preparation for the lesson by the method of oral questioning or input test control (a list of questions or test samples in section V).	10	Tests, standards, Textbook, lecture notes, guidelines, medical history,
3. The main part: Studying, taking notes, students discussing and explaining by the teacher the most important terms, concepts, certain problematic issues of a topic using methodological recommendations for students. Analysis and assimilation of the graphological structure of	50	patient demonstration Situations of tasks, educational analyzes.

the topic. Briefing. Performing a practical task according to options and forms (group and individual). Verification and evaluation of completed tasks. 4. Self-student work: Performing individual situational tasks according to the options proposed by the teacher. Individual control of decision results. 5. The final part: Final test control of knowledge and skills on the topic. Grades for each student. Homework. academic break 90 minutes together	 10 15 10	training journal Training journal

V. List of control questions

- ✓ Preparation of patient for roentgenologic investigation.
- ✓ Plane urography.
- ✓ Contrast substances, used in urologic practice.
- ✓ Ways of administration of contrast substances.
- ✓ Methods of roentgenologic investigation of urologic patients.
- ✓ Peculiarities of introduction of contrast substance into renal pelvis during retro(ante)grade urography.
- ✓ Comparison of diagnostic value of USI, CT and MRT.
- ✓ Radioisotope diagnostics in urologic practice.

VI. Structural-logical scheme of the lesson content:

Roentgenologic (X-ray) and radioisotope methods of investigation

	Educational elements	
Roentgenologic anatomy of kidneys	1) level of location; 2) angle between longitudinal axes of kidneys; 3) sizes of kidneys; 4) physiologic mobility	
Plane urography	1) shadows (contours) of kidneys in the norm; 2) significance of line of lumbar muscle; 3) shadows, which simulate calculi	1) phleboliths; 2) fibromatous uterine nodes; 3) calcified lymphatic glands
Excretory urography	1) indications; 2) roentgen-contrast preparations and their dosages; 3) procedure of their usage; 4) modifications; 5) contraindications	1) orthostatic urography; 2) compressive urography; 3) infusion urography with postponed films; 4) urography on breathe in/ on breathe out
Retrograde ureteropyelography	1) indications; 2) amount of contrast substance for pyelography; 3) procedure of performing; 4) contraindications	
Cystography	1) descending cystography;	1) with thin contrast substance;

	2) ascending cystography	2)pneumocystography; 3) with combined contrast study; 4) residual;
Urethrography	1) indications; descending (mixed); ascending	

Structural and logical scheme and the content of the themes «Instrumentation, endoscopic and ultrasonic methods of diagnosis in urology»

	Educational elements	
Instrumental methods of urethra examinations	Bouginage	Aim Types of bougie. Technology bouginage. Prevention of the complications
	ureteroscopy	Prevention of complications. Types of the ureteroscopy. Indications and contraindications
Instrumental ways of research of the bladder	Catheterization of the bladder. Cystoscopy	Types of catheters. Technology of the bladder catheterization. Indications. Contraindications. Types of cystoscope. Chromocystoscopy
Instrumental methods of ureters examinations	Catheterization of the ureters. Ureteroscopy	Indications. Complications. The technique\method ofexecution
Ultrasound examinations of the kidneys, ureters, the urinary bladder, prostate gland, the male genital organs	Terms of execution. Rate. Pathology	Transabdominal. Transrectal
Intervention ultrasound in urology	Methodology. Conditionsof execution	Percutaneous puncture nephrostomy. Percutaneous puncture of renal cysts.Percutaneous biopsy of the kidney, prostate, scrotum organs. Percutaneous puncture drainage of suppurative destructive processes in kidneys

VII. The most important terminological concepts and theoretical issues of the topic. Contents of the lesson

Instrumental methods and ultrasound examinations as usually concludes diagnosis of many urological diseases. These methods are used in the majority of upper and lower parts of urinary tract.

Cystoscopy-in tumour of the bladder determines the location andcorrelationtumor cells with ureter eyes. Cystoscopy is obligatory examination intotal hematuria, which allows to set the place of bleeding. Biopsy of the tumor and mucosa of the bladder helps in diagnosis during

cystoscopy. In the specific injures of the bladder, diverticulum, uterovesical pouch, leukoplakia, cystalgia and tumors the diagnostics is impossible without the use ofcystoscopy.

Chromocystoscopy – allow to determine the excretory function of each kidney and ureteral patency. This method is used for the differential diagnostics of the urological diseases and acute surgical pathology of the abdominal cavity.

Catheterization of the ureter is used to determine of its permeability, the level of obstruction, the drainage of the kidneybowl during ureteral patency violations and to obtain urine separetly from each kidney. Catheterization is used for retrograde ureteropielography, during the level of obstruction in ureter.

Transurethral Electroresection is used to remove the tissue of the bladder, the prostate tumor of coagulating current with a help of a metal cystorezectoscope loop.

Ultrasound (sonography) is used to obtain anatomic information and as a way of visualization of the interventional procedures of kidney biopsy, prostate gland, puncture methods of temporary drainage of the upper urinary tract.

Professional algorithm of skills forming: bladder catheterization.

Task	Approximate action sequence	Comments Self-control
To become proficient in technique of bladder catheterization in women.	The patient lies on his back with legs bent in the hip and knee joints,her knees are moved apart, or on gynecological chair. Reservoir for collecting urine is placed between her thighs. After antiseptic treatment of the external urethral opening of the urethra and vestibule of vagina catheter is gently introduced through the urethra into the bladder. The appearance of the urine from the catheter indicates that it is contained in the cavity of the bladder	Observe the rules of asepsis and antisepsis strictly.Follow the preservation of the catheter sterility after its removing from the package.Introduction of the catheter in the urethra should not be accompanied by violence. In the case when admixture of blood in the urine appears in the hole of the catheter, manipulation must be stopped and senior is invited.

Content of the theme.

Kidneys are located on both sides of the spinal column: at the right – on the level of XI thoracic and III lumbar vertebrae; at the left – one vertebra higher.

There are distinguished two basic variants of location of kidneys: high and low. In case of high location, kidneys are hidden behind XI and XII ribs, in case of low location – come out from lower edge of XII rib. Longitudinal centerlines of kidneys are directed obliquely from top to bottom and outside, that is why if position of kidneys is high, renal angle between these centerlines does not exceed 15°, if it is low – reaches 30°.

Sizes of the kidneys in adult person is 12x7 cm. on average. In children height of renal area of the spinal column is relatively less, than in adults, lower edges of kidneys are located closer or at the level of crest of iliac bone. In infants upper edge of the left kidney is located at the level of XI thoracic vertebra, and of the right one – XII, lower end of the left kidney reaches IV, and of the right one – V lumbar vertebra. Left kidney is located higher than the right one in 60 % of cases.

Sizes of the kidneys in children depend on their age. In newborns length of kidneys equals on average 4,8 cm, and width – 2,9 cm, in children aged 6-7 років – correspondingly 9,2 and 4,7 cm, 14-15 years – 11,7 and 5,6 cm.

Length of the kidney in children over 5 years of age is defined by the formula x = 0,379y, where x – length of kidney, y – child's age.

In the norm length of the right and left kidneys differs not more than by 1cm. In the course of growing of a child, lower edges of kidneys part, and upper ones become closer.

Functional and morphologic changes of kidneys are assessed both visually and by means of defining a number of quantitative findings, specifically by renal-cortical index (RCI).

RCI = (-i ABC.D)• 100%,

where AB: A – length of kidney; B – its width; C – length of pelvic-caliceal shadow; D – its width.

In the norm RCI is 60-62 %, and its decrease testifies to reduction of amount of renal parenchyma.

Kidneys are movable and in each breathing in displace approximately by height of one vertebra. Respiratory mobility has a definite importance for urodynamics. It is disturbed in the presence of sclerotic or inflammatory process in pararenal tissue during lesion of kidney proper, because in this case enlargement of the kidney and its fixation to the surrounding tissues is observed.

Renal pelvis is located at the level of I-II lumbar vertebra. System of renal pelvises and calices is distinguished by significant variability, that is why to assess it specific experience is necessary.

Position of renal pelvis may be out-, intra-renal or, more often, transitory. Distal part of renal pelvis in the funnel-like shape passes into renal pelvic-ureteral segment. Usually kidney has three big renal calices – upper, middle and lower, from them one or some small calices come. Big calices have neck and apex, small calices come from them. On usual roentgenograms, made in patient's position lying on the back, small calices are seen partially through ventral or dorsal direction. Line, connecting apices of calices is located in parallel to outer renal contour.

Ureters have 4 physiologic constrictions along their length: 1) at the place of passage of renal pelvis into urethra; 2) over iliac vessels; 3) in the prevesical area (juxtavesical part of ureter); 4) in the intramural portion of ureter. On excretory urograms in the norm ureters are seen only partially; this is explained by the fact that urine flows by separate portions, and section filled at the moment of exposure is revealed only. On X-ray picture one can see places of physiologic constrictions. Length of ureter in the adult person makes up 25-30 cm on average, its inner diameter – 0,4-0,6 cm.

In infants ureter moves off renal pelvis higher, than in adults and lies nearer to the spinal column. As upper edges of kidney come closer, ureter occupies its usual position.

Elastic and muscular tissues of urinary ways in children are poorly developed, their contractility is relatively small. Due to this congestion of urine develops even in case of insignificant obstacle to outflow, e.g. in physiologic folded structure of mucous membrane.

Urinary bladder has various forms, it depends on stage of its filling. Anterior, posterior, upper, lower, right and left lateral walls of it are distinguished. In case of standard introduction of 100 ml of substance in it, contours of urinary bladder are even, distinct, form is round with somewhat reduced diameter at the top, or it may be of oval form. Lower contour passes in parallel to pubic symphysis or somewhat lower. Configuration of urinary bladder changes in case of its pathologic changes and those of other organs, bordering with it.

In newborns urinary bladder is located intra-peritonealy, but later it gradually lowers. In the state of filling urinary bladder has pear-shaped or oval form and reaches apex of II lumbar vertebra. Capacity of urinary bladder depends on child's age: before 1 year of age it is 30-35 ml, from 1 to 3 yearsв – 90 ml, from 3 to 5 – 100-150 ml, from 9 to 12 – 200-300 ml, from 12 to 15 – 300-40 ml.

Female urethra is visualized on mixed urethrogram (picture may received during urination after introduction of contrast substance) or ascending urethrogram. Urethrogram in females is performed extremely rarely; it is done only in children with the aim to diagnose defects of development.

Male urethra forms two curves – at the level of the angle, formed by the root of penis and scrotum and lower edge of pubic symphysis. On urethrograms prevesical part of urethra is significantly narrower, than in other places. This fact should be considered while diagnosing its constrictions. Sometimes at this level filling defect which corresponds to seminal tubercle is revealed.

External sphincter of the urinary bladder divides male urethra in anterior and posterior portions. In the anterior portion of urethra spongy part is distinguished, in the posterior – membranous and prevesical ones.

Female urethra is significantly shorter, than male. On urethrogram it looks like a short wide strip with even contours.

Urethra in children has some anatomic peculiarities related with age. Sizes of urethra in boys depend on age. Before the age of 12-14 years urethra grows slowly. Its intensive growth is observed in pubertal period, when along with growth of spongy part prevesical one also growth.

Due to a high height of urinary bladder prevesical part of urethra in newborns is longer than in children of elder age. Its length is up to 0,9 cm, and membranous one is up to 1 cm. This part occupies space between apex of prevesical gland and spongy portion. This is the longest part.

Spongy part of urethra is the longest. In a newborn its length is 4,5 cm, it has two dilatations: in the area of spongy part and at the level of penile balanus (navicular fossa). The narrowest site is external urethral opening.

In the norm in boys urethra has different image on roentgenogram; it depends on child's rate and phase of urination. Curvature is expressed more as compared with adult. Posterior portion of urethra forms angle (almost obtuse) in relation to anterior portion, its diameter is less, especially in membranous portion. On roentgenogram boy's urethra is wide, with distinct even edges. On mixed cystourethrogram it has cylinder form in some cases. Often along its passage irregularities, circulatory constrictions, retractions or protrusions are revealed; they are caused by uneven contraction of walls or muscles, located paraurethrally. These defects may be differentiated from limited stenosis by means of serial cystourethrography, serial big-framed cystourethrofluorography, cystourethrotelescopy or roentgen-cinematography

Urethra in girls and posterior part of urethra in boys are the same in embrionology and anatomical structure. They have almost identical picture on roentgenogram,

In the norm urethra in girls is of cylinder form on roentgenogram. Its walls are even, mutually in parallel and gradually come closer in the direction of external opening. Diameter of distal and proximal parts is approximately the same. Both in boys and girls along its passage urethra may have irregularities. Due to this, in girls three types of urethra are distinguished: cylindrical, fusiform and coiled.

On the basis of mixed cystourethrography, performed at the height of urination act with intra-bladder pressure and filling being maximal, one can consider the type of urethra. At the onset and at the end of urination urethra of any type may have cylinder form and narrowed lumen. As its middle part is the most elastic (is able to stretch), on mixed cystourethrograms quite often urethra is of fusiform. Its sharp fusiform-like dilatation is typical for distal stenosis.

When pathology is absent, diameter of middle part of urethra exceeds diameter of distal and proximal parts by 2 times.

Deferent ducts and seminal vesicles may be seen on roentgenogram only after introduction of roentgen-contrast substance. With this aim previously deferent duct is exposed and punctured. Water- or fat-soluble substances are used as contrast ones.

Deferent ducts look like thin threads, seminal vesicles are cluster-like formations, located on both sides higher than prevesicle gland. Urogenitography is made to reveal stage of potency of deferent ducts or to reveal pathologic process in seminal vesicles.

Preparation for X-ray study

First of all expediency of X-ray study should be defined, case-history, patient's complaints should be investigated in details, results of urine tests, urea, rest nitrogen in blood and Zimnitsky's test should be analyzed.

Quality of X-ray pictures, by and large, depends on preparation for investigation. Procedure of roentgenography, envisaging the least radiation loading should be chosen. Besides, it is necessary to maximally empty patient's intestines from gases, feces. Presence of gases in the rectum not always testifies to insufficient preparation of a patient. In children of younger age, as well as in case of renal insufficiency, attacks of renal colic, concomitant diseases of the liver intense gasformation is observed, and it is almost impossible to sufficiently empty intestines from gases.

Preparation of patient is begun 2-3 days before study. Food products which are favorable for gas-formation (cabbage, potato, fruits, beans rye bread, milk, sugar, etc.) are excluded from dietary intake. Patient is administered carbolen (activated carbon) by 0,5-1grams 4 times a day. For prevention of gas-formation on an empty stomach, patient is allowed to have glass of strong tea without sugar with biscuit made of wheat bread. Investigation of urinary tract in children is performed strictly at physician's presence. During investigation of infants temperature in X-ray room must be not lower than +30°C.

It is better to use such X-ray apparatus, which possesses minimal exposure for infants. Taking into account high sensitivity of children to ionizing radiation, great attention should be paid to anti-radiation defense. All areas of a child's body, except area under investigation, should be covered with lead-impregnated rubber. Genital glands should be covered especially thoroughly. When the occasion requires, children are fixed by means of well fitted mechanic means. Gentle behavior with a sick child, taking into account his/her age makes it possible to have good contact and to successfully do X-ray investigation. Some complicated X-ray studies are performed under narcosis.

Children of young age in the evening before investigation receive cleansing enema, in the morning they have mild breakfast. X-ray pictures are made after it. In elder children 1-2 days before investigation are limited in the number of carbohydrates; 1-1,5 hour they are administered cleansing enema. In the morning they have sandwich and sweeten tea. In intravenous introduction of contrast substance biologic test is recommended: after introduction of some milliliters of agents which contain iodine, there is some minutes break, if reaction is absent, necessary dose is introduced slowly.

Quality of X-ray picture also depends on correct choice of roentgen-contrast substance. Iodine-containing substances are divided into ionic and non-ionic. It is preferable to use non-ionic substances (omnipac, ultravist); they have less number of side-effects. Ionic substances used are urograrin, triombrast, trizograph and other water-soluble 3-iodine-containing contrast substances.

X-ray methods of diagnostics of urologic diseases must precede X-ray examination of abdominal cavity organs, because barium which remains in the intestine after examination of pelvic organs may cause wrong interpretation of urograms.

X-ray methods of investigation

Plain urography. X-ray examination of kidneys and upper urinary ways is begun with plain image – plain urography. Plain urography must enclose the whole urinary system from the upper ends of kidneys to the lower edge of pubic symphysis. Image should be made on the X-ray film with the sizes of 30x40 cm. Image is distinct in case when intestinal gases do not close areas of location of kidneys, and external edges of lumbar muscles are distinctly defined.

On plain urogram shadows of kidneys are revealed; this allows to judge about their configuration and localization, sizes, contours, presence of concrements.

Usually radiologist draws conclusion about presence of shadows, suspicious-looking concrements, because these shadows may coincide with the place of projection of urinary ways, but caused not by them. As an example, sometimes these shadows may be caused by calcareous lymphatic glands. In these cases roentgen-contrast substance must be introduced and only after this investigation, conclusions as for pathology may be drawn.

Plain urography makes it possible to define: a) structure of bone tissue of the seen parts of skeleton (lower ribs, spinal column, pelvis, hip joints); b) position, size and form of kidneys, their contours and structure of shadow; c) distinctness of contours of lumbar muscles; d) presence of shadows of concrements in the kidneys and urinary ways, prevesicle gland as well as presence of calcification in the organs of abdominal cavity and retroperitoneal area.

Quite often on plain image anomalies of skeleton, its pathologic changes, causing disorders of functions of urinary system may be seen.

Renal contours are observed in 60 % of cases. Increase or decrease of kidney sizes is a sign of anomaly (hypoplasia, polycystic renal disease, etc.) or consequence of pathologic process (shrinkage of kidneys, neoplasm, etc. Unusual position of kidney testifies to anomaly or pathologic motility, pushing it aside by some neoplasm. In the norm shadow of kidney is homogenous, that is why plain urography makes it possible to reveal calculi of urinary organs, except for roentgen-negative (urate, xanthine, cystine ones).

Foreign bodies in retroperitoneal area, fecal bolus, urinary stones, calcified cavern, phlebolith, calcified areas of neoplasms or lymphatic glands, etc. may be mistakenly considered as nephroliths. Sometimes on plain image one can see multiple shadows of fine dense concrements, which are localized predominantly in the layer of cerebral substance of renal parenchyma or in the area of renal papillae. Predominantly nephrocalcinosis develops in children with renal tubular acidosis.

Edges of lumbar muscles in the norm may look like a strip with distinct contours, coming from I lumbar vertebra to the pelvis. Absence or smudged contour of this muscle in one side may testify to timorous or inflammatory process in retroperitoneal area. In the norm in pre-school aged children edge of lumbar muscles is defined insufficiently; this symptom is not taken into account, while making diagnosis. When ureters on the plain image in the norm are not seen, contours of urinary bladder may be defined in its filling in with concentrated urine.

On plain urogram in the urinary bladder calculi or foreign bodies which got into it through ureteral lumen may be revealed.

Excretory urography – X-ray method of investigation of kidneys and urinary ways, which is based on selective ability of kidneys to excrete introduced into organism definite roentgen-contrast substances. This method is fundamental one in a complex of X-ray examination of children. This method makes it possible to assess functional and morphologic state of kidneys and urinary ways. Usually excretory urography is performed after plain urography.

Non-ionic three-atomic iodine-containing agents (omnipac, ultravist) with high concentration - 60-85 % are used as contrast substances. Newborns and pre-school aged children have good tolerance to rather high doses of roentgen-contrast substances.

Due to low concentration function of kidneys, infants under 1 year of age are introduced 3-4 ml of contrast substance per 1 kg of body mass, children from 1 до 3 years – 2-3 ml/kg (10-15 ml), after 3 years of age – 1-2 ml/kg (20-30 ml), but not more than 60 ml in the aggregate. The most often these substances are introduced warmed up into the veins of elbow flexion during 1-2 minutes.

Before excretory urography patient’s sensitivity to contrast substance is checked up: intravenously 1 ml of solution is introduced. If reaction is absent, roentgen-contrast substance is injected slowly during 2-3 minutes (for adult - 0,5-1ml per 1 kg of body mass). Image is made in horizontal position of patient. In specific cases roentgen-contrast agents, containing three atoms of iodine in molecule, may be introduced intramuscularly or subcutaneously; in infants they are introduced intravenously, intaosseously, rectally and into crown of head. Infants under 6 months

of age are recommended 50-60 ml to be introduced rectally, from 6 to 12 months - 60-75 ml, after 3 years of age – 100 – 120 ml.

1-2 minutes after intravenous introduction of agent, saturation of the whole renal parenchyma is observed. On X-ray picture performed at this moment, on nephrogram, - contrasted renal parenchyma is depicted. Caliceal-pelvic system and urinary ways are depicted in 5-10 minutes in case of satisfactory renal function. That is why the first picture is made 7-10 minutes after introduction of roentgen-contrast substance, second picture – 15-20 minutes later, and the last one – in 25-30 minutes. In case of lesion of renal function, postponed pictures are made – 40-60 minutes later, 1,5-2 hours later. One picture is expediently to be made on both on breathing in and breathing out (to precise stage of renal motility).

Excretory urography may be performed in conditions of deprivation or vice versa in case of increased diuresis.

While interpreting urogram, saturation of renal parenchyma with roentgen-contrast fluid, size, from, position, contours are defined; as well as time and intensity of filling caliceal-pelvic system and ureters with contrast substance, state of urinary bladder in dynamics, state of upper urinary ways. Time, distinctness of image appearance and rate of evacuation of roentgen-contrast substance makes it possible to define functional disorders, various deformations.

Indications to excretory urography: relapsing infection of urinary ways, changes in the urinary sediment, enuresis, anomalies of organs of urogenital system, disorder in urination act, arterial hypertension, pain in the abdomen, presence of neoplasm, prolonged elevation of temperature, absence of urination in a newborn over 7-day period.

Contra-indications to excretory urography: expressed renal insufficiency (level of urea exceeds 13,3 mmol/l, relative thickness of urine is less than 1,010) disturbance of liver function, that of heart, vessels; increased sensitivity to iodine-containing agents; first half of gestation period; diathesis, allergy.

With the purpose to define stage of renal motility, excretory urography is performed when patient is in horizontal and vertical position.

To intensify contrast image of urinary ways on urogram, in the period of early stages of renal insufficiency, infusion urography is performed. Roentgen-contrast substance is diluted to 35 % concentration with 5 %- glucose solution or isotonic solution of natrium chloride. It is introduced intravenously, by drops, during 5-30 minutes. Dose for adult person is 60-80 ml. For children under 1 year of age dose is calculated in such a way: 5 ml per 1kg of body mass, for children aged 3-5 years – 2-3 ml/kg, 7-14 years old – 1-1,5 ml/kg.

Urograms are done in 1, 10, and 20 minutes after introduction of roentgen-contrast substance, if necessary postponed images are made. On the first urogram renal parenchyma is depicted, because roentgen-contrast solution is not yet excreted into calices and renal pelvis.

Indications to infusion urography: child under 1 year of age, decrease of concentration and excretory function of kidneys, compensated renal insufficiency, small information value of excretory urography.

Possible complications: nausea, vomiting, hyperemia of facial skin, breathlessness, collapse.

While introducing roentgen-contrast substance both general and local reactions may be observed. Local manifestations (localized pain, redness of skin at the site of injection or of the whole arm, erythema, urticaria, running nose, conjuctivitis) disappear without any medication. General reaction may be manifested by swelling of larynx, lungs, disturbance of function of central nervous system (convulsion, hemiparesis, paralysis, disturbance of respiratory function), drop of arterial pressure, arrhythmia, collapse, coma, shock. Treatment is symptomatic. For the urgent help rendering, oxygen, 30%-solution of natrium thiosuphate, which neutralizes iodine agents, cardiac glycosides, antihistamines must be in the X-ray room.

While studying urograms, terms and stage of filling and emptying of renal calices, renal pelvises, ureters and urinary bladder should be defined. This makes it possible to judge about

concentration and excretory ability (thus about morphology as well) of kidneys and urinary ways.

In the norm shadow of renal parenchyma is homogenous. In case of pyelonephritis, nephrolithiasis, tuberculosis, on the background of renal shadow one can notice lucid areas, which indicate indirect to lesion of parenchyma.

Excretory (infusion) urography is a functional tests, in case of good functioning of kidneys at 3-d minute renal calices and renal pelvises are contrasted distinctly, and at 5-7 minute – urinary bladder. Retarded coming of roentgen-contrast substance (or its absence) into one of kidneys testifies to decrease of its function. This situation may occur in case of renal colic and is explained by lesion (at this moment) uro- and hemodynamics.

Urethral shadows on serial excretory urograms in the norm change; this is explained by its contractility. In dyskinesia, spasm of renal calices and ureters is defined. Whether on excretory urogram urethra is revealed well along the whole length, this may point to decrease of its tonus.

During infusion urography due to a permanent coming of roentgen-contrast substance into bloodstream, kidneys are filled better and urethra may be seen along the whole its length.

In case of nephrolithiasis on excretory or infusion urogram one can see not only concrements, but their form and sizes, stage of lesion of renal function, urodynamics may be defined.

Amputation in case of deformation of calices, changes of renal pelvis and renal contours may point to presence of tumor.

Various forms of tuberculosis process is followed by contractility of calices, disjunction of renal papilla, single or multiple caverns, which may be joined with calices or with renal pelvis, as well as by change of configuration of ureters and urinary bladder.

These methods of investigation are of high information value in case of hydronephrosis and ureterohydronephrosis; using them it is possible to establish not only stage of dilatation of renal cavity, but to precise stage of lesion of renal function and to monitor treatment dynamics as well.

Renal arteriography is obtaining of roentgen-contrast image of renal arterial system.

Depending on mode of introducing roentgen-contrast substance in aorta, trans-lumbar, trans-umbilical and trans-femoral aortography is distinguished.

To carry out trans-lumbar aortography, patient is put down on the table on his/her abdomen. Left hand is along the trunk, right one – behind the head. Aorta is punctured in the lumbar area. Needle is introduced under local novocain anesthesia, departing 8-10 cm to the left from the middle line of the spinal column and 2-3 cm lower than XII rib, needle is directed to the middle part of the body of I lumbar vertebra. Spinal column is a guiding line for moving needle forward into spinal column. On moving needle forward, two bone obstacles may happen. The first one is at the depth of 4-5 cm (lumbar process of spinal column). To by-pass it, needle is drawn out backward by 1-2 cm and is directed in more vertical position. Another obstacle is at the depth of 9-10 cm (body of vertebra); this is by-passed in such a way: needle is drawn out by 2-3 cm and is directed under right angle up to horizontal plane. In slow moving needle forward, at the depth of 12-14 cm it is possible to define pulsation of aorta. After additional anesthesia of paraaortal fatty tissue aorta is punctured and just from the needle pulsating blood begins to come in. 20-30 ml of roentgen-contrast substance is introduced though the needle during 3-5 seconds, images are made. Being certain that images are of good quality, the needle is moved away.

This method may be used for investigation of adults and children of elder age only; in younger children aorta has some anatomic-topographic peculiarities.

In the majority of cases trans-femoral aortography by Seldinger is used, it is a simple and safe method.

After treatment of operation field with two fingers of the left hand, femoral artery is palpated at the level of inguinal ligament and fixed. Femoral artery is punctured by means of special trocar 2-3 cm lower from inguinal ligament. Guide with elastic end is introduced through the trocar, fixing it trocar is removed. Catheter is put on this guide and is introduced into femoral artery.

Catheter is put on the guide and catheter is introduced along the guide into femoral artery, later into the aorta, simultaneously removing the guide, up to the level of origin of renal arteries from the aorta. 20-30 ml of roentgen-contrast substance is introduced into aorta, images are made. Having obtained series of roentgenograms, catheter is removed. On the site of puncture tight bandage is applied for 2-3 hours to avoid bleeding and hematoma development.
Catheterization of aorta in children under 3 years of age is often performed after baring of femoral
artery.

To obtain distinct image of arterial system of kidneys, selective renal arteriography is performed: under control of roentgenoscope a special catheter with curved end is introduced into aperture of artery of one kidney. Images are made after introduction of 8-12 ml (5-10 ml for children) of roentgen-contrast substance through the catheter.

While examining children, sometimes trans-umbilical arteriography is used. In doing so, catheter is conducted through umbilical artery, which in children is obliterated not along the whole length.

Renal arteriography makes it possible to assess state of vessels and renal blood circulation, to define stage of lesion and to make differential diagnosis between neoplasm, solitary cyst, etc. as well. The most often renal arteriography is used while suspecting renovascular hypertension, and tumor especially.

In the norm renal arteries descend from aorta at the level of lower edge of the I lumbar vertebra, but deviations may happen within the limits of height of body of one vertebra.

Vascular pattern is evenly distributed in all portions of the kidney, arteries are seen along the whole length, up to the branching of V order. Marked nephrographic effect points to preserved renal function.

On angiograms made in dynamics, four phases of circulation of roentgen-contrast substance are distinguished: arteriogram; nephrogram; venogram; excretory urogram.

By means of arteriogram diameter and contours of the aorta, main trunks and branches of renal arteries are defined, anomalies, dilatations, constrictions and zones with decreased vascularization are revealed. Nephrogram gives an idea about form and topography of kidneys.

In all cases, data obtained from both sides should be compared. This makes easier assessment of results, especially in unilateral pathology.

Renal arteriography is a complicated investigation, that is why it is performed only by strict indications, when suspecting renal tumor or that of adrenal gland, arterial hypertension, intricate anomalies of kidneys and renal vessels.

Contraindications: sharply marked atherosclerosis of the aorta and femoral artery; increased sensitivity to iodine-containing substances; active phase of pulmonary tuberculosis; decompensated insufficiency of blood circulation; expressed insufficiency of renal functions and those of the liver.

Complications: thrombosis and spasm of femoral artery. Embolism, pain in the extremities, traumatic aneurism of femoral artery, etc.

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Contraindications: sharply marked atherosclerosis of the aorta and femoral artery; increased sensitivity to iodine-containing substances; active phase of pulmonary tuberculosis; decompensated insufficiency of blood circulation; expressed insufficiency of renal functions and those of the liver.

Complications: thrombosis and spasm of femoral artery. Embolism, pain in the extremities, traumatic aneurism of femoral artery, etc. Renal cystography is used to reveal solitary renal cyst by means of transcutaneous puncture and filling of it with roentgen-contrast substance. Procedure is the same as in case of antegrade pyelography.

Site of puncture, depth and angle of injection of needle is précised by means of ultrasonic scanning. Contents of cyst is evacuated, along the needle roentgen-contrast substance (urotrast, verografin, etc.) is introduced, volume being equal that of removed fluid. Pictures are made; having obtained cystogram, roentgen-contrast substance is evacuated. Antibiotics or tannins (96 % ethanol) are injected into cyst cavity.

Cystography is a method of investigation of urinary bladder, carried out after filling it with roentgen-contrast substance. Together with excretory urography, cystography is the most prevalent method of examination of urogenital system.

Indications. The necessity of defining urinary bladder configuration, its anomalies, revealing of fistulas, diverticuli, tumors, foreign bodies and roentgen-negative calculi, ureterocele, bladder-renal refluxes, benign hyperplasia of prevesical gland, contracture of urinary bladder neck.

Contraindications. At presence of bladder-urethral reflux, usage of barium suspension is contraindicated. In case of macrohematuria, usage of gaseous roentgen-contrast substances should be avoided. The latter contraindications to cystography are the same as for other instrumental methods of intervention.

Complications. Complications may be linked with reaction to introduction of urethral catheter, bladder distention with roentgen-contrast substance, bladder-urethral reflux (acute pyelonephritis).

10-20% three-iodine-containing contrast substances, 10-15 % suspension of barium sulphate, oxygen or carbon dioxide gas are used for contrasting.

Descending (in case of excretory urography) and ascending (retrograde) cystography are distinguished.

Patient is in supine position on the table for X-ray. Urinary bladder is emptied (either physiologically or by means of catheter). In case of ascending cystography roentgen-contrast substance, warmed to body temperature is introduced through a catheter in the volume, which equals that of urinary bladder. Catheter is removed and images are made in anterior-posterior and semilateral positions. Carrying out cystography, urinary bladder is emptied.

Cystography makes it possible to define sizes, form (mega-ureter, small urinary bladder, etc.), contours (undulating character in expressed trabecularity, protrusions in diverticulum, defect in case of neoplasm, impressions in squeezing in case of inflammatory or tumor process of the bordering organ) of urinary bladder. In case of insufficient function of internal sphincter, filling defect in posterior urethral part may be revealed.

In descending cystography (it is performed 40-60 minutes after excretory urography) image of bladder contours of is less distinct.

This investigation is especially valuable in such cases, when due to some reasons (bladder stricture, acute prostatitis, urethritis, etc.) it is impossible to introduce catheter into urinary bladder.

Retrograde cystography in infants and children of pre-school age is performed under narcosis.

Urinary bladder is emptied by means of elastic catheter (for catheterization of newborn boys ureteral catheter may be used) and is filled with roentgen-contrast substance. Children under 2 years of age are introduced 50 ml, 5-7 years of age - 80-100, over 7 years of age – 100-150 ml.

Catheter is removed and images in three projections are made – in anterior-posterior, semi-lateral and axial.

In the norm urinary bladder in children is pear-shaped with distinct contours. By means of retrograde cystography it is possible to reveal calculi, foreign bodies, tumors, sometimes – ureterocele, tuberculosis lesions of bladder, etc.

In case of bladder diverticulum, X-ray picture is very characteristic: near urinary bladder additional cavity is seen.

Neurogenic bladder is often enlarged (tower-like). Weakness of sphincters of urinary bladder is revealed in the form of tongue-like throwing out of roentgen-contrast substance into posterior part of urethra (Fronstein's syndrome).

Retrograde cystography is one of the basic methods of diagnostics of urinary bladder traumas. In these cases roentgen-contrast substance oversteps bladder limits.

By images made after urinary bladder has been emptied on one's own, residual urine is revealed.

While carrying out pneumocystography, except for roentgen-contrast substance oxygen is introduced into urinary bladder. This procedure is performed not only by means of urethral catheter, but by mean of supra-pubic drainage, or by means of supra-pubic puncture as well.

Cystography is of great significance for diagnostics of vesico-ureteral reflux. At state of rest, passive vesico-ureteral reflux may be revealed. Especially often this is observed on postponed cystograms, when images are made every 30 minutes during 3 hours.

Mixed cystography, which is performed at rest state just after urination is even of more diagnostic value.

While investigating by means of this method, during urination act intravesical pressure grows sharply and in case of weakness of closing apparatus of urethra orifice roentgen-contrast

substance penetrates into urethra and even into renal pelvis – active reflux. During mixed cystography practically the whole urinary system is investigated (from kidneys to urethra), the image must be made on the film of a big size, all portions including.

With the help of mixed cystography valuable information about state of the bladder neck and that of urethra may be obtained. These portions due to their localization in case of their lesion unfavorably impact portions of urinary ways, located higher.

Within the norm on mixed cystogram funnel-like transition of bladder into urethra is observed. In case of contracture of bladder neck in children plane of its lower segment is seen. In this case roentgen-contrast substance passes through bladder-urethral segment by a thin stream.

In presence of urethral valves, hypertrophy of seminal tubercle, on cystogram there is dilatation of urethra over the place of obstacle, sometimes it is lower (post-stenotic dilatation).

Suspecting infiltrative growth of urinary bladder tumor, to define elasticity of its wall, roentgenograms are made on the same film in different stages of filling of urinary bladder – polycystography. Elastic catheter is introduced into urinary bladder, and by dribble portions roentgen-contrast substance is introduced. After each portion image is made. On this image corresponding quantity of concentric contours is revealed. In the place of invasion of urinary bladder wall with tumor due to its rigidity, only one contour appears.

Retrograde ureteropyelography. X-ray investigation which is performed by means of filling in of pelvic-caliceal system and of the urethra with roentgen-contrast substance in the direction against flow of urine, that is retrograde. Roentgen-contrast substance is introduced by means of ureteral catheter, introduced either into urethra or renal pelvis in cystoscopy. In the recent years due to extending possibilities of excretory urography and introduction into clinical practice of angiography, puncture transcutaneous antegrade pyelography, computed tomography, indications to retrograde pyelography significantly narrowed. At the same time obtained experience showed, that retrograde pyelography may cause serious complications.

Indications. At present time retrograde pyelography is used only in those cases, when other methods of investigations do not clear up diagnosis in full, especially if excretory urography does not give expressive image of pelvi-caliceal system and of the urethra due to a sharp decrease of renal function.

Contraindications. Acute inflammatory diseases of urinary tract and male genital organs, obstacles along the route of low urinary ways (benign hyperplasia of prevesical gland, urethral stricture, etc.).

Complications. Attack of acute pyelonephritis in the kidney under investigation, which may cause more severe complications such as bacteriemic shock and urosepsis are the most often complication of retrograde uretero-pyelography. Increase of intra-pelvic pressure and development of caliceal-renal refluxes in the kidney, affected by carcinoma, threaten with dissemination of tumor cells with blood flow. Careful, slow introduction of roentgen-contrast substance in small quantities (3-5 ml) to avoid refluxes development is of main significance in prevention of complications of retrograde pyelography. In modern conditions presence of electro-optical transducer and roentgen-television device makes it possible to avoid reflux development and mentioned-above complications.

Pneumopyelography. It is modification of retrograde ureteropyelography, while performing it gas is used as contrast substance. This procedure is used in diagnosing of roentgen-negative stones. On the background of gas in cavitary system of kidney or urethra, roentgen-negative stone is seen as defect.

Antegrade pyeloureterography. It is a procedure of roentgenologic investigation, based on direct introduction of roentgen-contrast substance into caliceal-pelvic system of kidney or by means of its transcutaneous puncture, or through nephrostomic drainage, set up by operative means. Indications to this method of investigation are those cases, when contrast substance is not seen on excretory urograms due to disorder of renal function, and it is impossible to perform retrograde pyelography (small capacity of urinary bladder, obstruction of urethra or ureter). Water-soluble, iodine-containing agents or gas may be used as contrast substances. Antegrade

pyelography with introduction of contrast substance is not complicated, but it requires observance of all rules of aseptic and antiseptic.

Lymphadenoangiography. This method is used to reveal metastases of malignant tumors of urogenital organs in lymphatic nodes of the pelvis and retroperitoneal space. Oil substances which are used as contrast agents are: iodolipol, etiodol, lipoidol, they are introduced by means of special measuring hopper into lymphatic vessels of the back of foot.

Possible complications: fat pulmonary embolism, lymphangitis and lymphadenitis. Prophylaxis of complications is: strict compliance with procedure of investigation; dosed introduction of agent into lymphatic vessel (not venous); roentgenologic control over the lungs after investigation. It is expedient to combine lymphadenoangiography with pelvic phlebography (venography).

Ureterography. This investigation may be descending (mixed) and retrograde.

Indications. Damage or disease of the urethra.

Contraindications. Acute diseases of the urethra.

Complications. Urethral refluxes, urethral fever, urethrorrhage.

Vesiculography. Operative method of roentgenologic investigation of deferent ducts and seminal vesicles.

Indications. Infertile marriage (aspermia). Tumors of seminal vesicles.

Contraindications. Acute inflammatory diseases of genital organs.

Computed tomography (CT). Up to date roentgenologic investigation. In diagnostics is above all known methods. Investigation is performed by means of roentgen beam with narrow focus, directed through the object, and is registered by

roentgen detectors. Computer processes the obtained information and it is produced on the screen in the form of image. These images make up «Pirogov's sections (scans)». Minimal distance between sections is 4 mm. Processing of the obtained sections by computer makes it possible to create two- and three-dimensional reformats. Up to date spiral computer tomographic scanners make it possible to recognize objects with diameter of 2-3 mm; these scanners far exceed ultrasonic ones in accuracy (the latter «see» object, beginning with 4 mm). Computed tomography gained the widest occurrence in urology and is the most informative method of investigation.

Indications. Practically all diseases of urogenital organs, which have signs of organic lesion. By the data of European standards of examination, this method of investigation is final and is entitled as pivotal one.

Contraindications. Pregnancy, psycho-emotional excitation, claustrophobia.

Complications. Not revealed.

Magnetic resonance tomography (MRT). Basis of this method is monoatomic hydrogen. By means of a strong magnetic field «excited» atoms of hydrogen may be registered. As atoms return into state of equilibrium (magnet relaxation) each tissue makes it characteristically for each type. The latter is important determinants of contrast image and intensity of signal. By means of computer processing of the obtained signals, on monitor screen a real image of the tissues under investigation appears.

In urologic practice MRT is used to diagnose tumor processes in urogenital organs. MRT makes it possible to obtain information about state of the great vessels of each organ with great accuracy; this is of special importance in defining stage of development of tumor process. This method is especially indicated in diagnosing of volume formations of kidneys in patients with renal insufficiency, administration of roentgen-contrast iodine-containing agents is contraindicated to them. MRT is an expensive investigation, so, nowadays not less informative but cheaper methods such as USI and CT are used more widely.

Indications. Organic lesions of urogenital organs, architectonics of great bloodstream and stage of its lesion.

Contraindications. Psycho-emotional excitation, claustrophobia.

Complications. Not revealed.

Radionuclide (radio-isotope) methods of investigation.

Radionuclide renography – obtaining of graphic image of dynamics of accumulation and excretion of radio-pharmaceutical agent by each kidney. As an isotope, gipuran iodine-131 or iodine-125 is used. In recent years technecium-99 enjoys big popularity. Therewith dose of radiation is extremely low for organism. This method gives mathematically precise information about functional state of each kidney. Radio-isotope renography may be used in emergent and pediatric urology. Special preparation for this investigation is not required.

Radionuclide scanning of kidneys (nephroscintigraphy). To reveal anatomical changes in kidneys method of radionuclide scanning and scintigraphy is used. Scanning is performed with movable detector. Scintigraphy is performed by means of reading out unmovable gamma-camera.

Scanning of kidneys – method of graphic image of renal parenchyma. For this method labeled Hg - 197 or Hg - 203 (promeran) is used. Scanning makes it possible to reveal number of functionally competent nephrons.

Indications. Tumor processes in the kidney, anomalies of kidneys.

Contraindications. Expressed renal insufficiency.

Complications. Not defined.

Dynamic computed scintigraphy. Method is based on the investigation of functional state of kidneys by means of registration of active accumulation of radionuclide by renal parenchyma. Iodine-131 (gipuran) or iodine-125 (promeran) and mercury-197 are used. Possibilities of computed gamma-scintigraphy are so wide, that they allow to notice 5% difference in the renal function.

Indications. Anomalies of kidneys. Renal tumors and cysts.

Contraindications. Not revealed.

Complications. Not defined.

Scintigraphy of parathyroid glands. It is used in patients with coral and relapsing nephrolithiasis to reveal primary hyperparathyroidism.

Scintigraphy of adrenal glands. This procedure is used in diagnostics of tumors of adrenal glands, when USI and CT are powerless.

Scintigraphy of testes. Method makes it possible to define location of testis, its sizes and functional competence. It is used in diagnostics of cryptorchidism.

Scintigraphy of skeletal bones. Radionuclide diagnostics used for revealing of metastases in the osseous structures. This method is of particular necessity in cases of prostate gland cancer. In the recent years by the help of isotopes it became possible to block development of these metastases.

VIII. Tasks for independent work of students (examples of situational problems and their solutions)

1) A 50-year-old female patient has been hospitalized to the clinic with complaints on presence of blood in urine, she has been ill for the first time. The stomach is soft, painless. Kidneys are not palpable. Pasternatsky symptom is negative in two sides. In plan X-ray film kidneys are in typical places, concretions in the projection of the kidneys, ureters, bladder were not revealed. On excretory urograms in 8-15 minutes caliceal and pelvic systemcontrasted on both sides, kidney function is not impaired.There is a defect of filling of 0.4 x 0,4 cm on the right side in the area of the pelvis on the top of the wall,that is why bleeding appears.What examinations should be carried out:

а) What is necessary to make a diagnose?

б) Where is bleeding from?

в) What are extra methods of examination?

Modeloftheanswer:

Cystoscopy, ultrasound, URS (ureterorenoscopy), X-ray examination of the lungs.

2. A 25-year-old female patient has been hospitalized with complaints on pain in the right iliac area, nausea, vomiting, increasing of body temperature up to37,4°C.The tongue is coated and dry. The stomach is painful in the right on palpation, kidneys are not palpable. Pasternatsky symptom is doubtful in the right. Symptoms of peritoneal irritation in the right are weakly positive; they are negative in the left.

Leukocytosis is 14,0 x 109mmol/l. In the analysis of urine leukocytes are 8.6 infield of view, red blood cells are single, fresh in field of view.

In ultrasound examination kidneys are in typical places, their contours are clear. Cavity system is not dilated in the right and in the left. The initial section of the ureter is visualized.

What examination should be carried out to make differential diagnosis?

Model of the answer:

Chromocyctoscopy, plan, excrectoryurography, RRG

1) Female patient, 35-years-old was admitted to the hospital presenting complaints on colic-like pain in the lumbar area in the right. Pain is accompanied by nausea, vomiting, frequent urges to void urine. Objectively: general state is of moderate severity. On deep palpation tenderness in the area of the right kidney is felt. Pasternatsky's symptom is positive in the right.

On plain urogram at the level of IV lumbar vertebra in the right, shadow with suspicion of calculus, of oval form, sizes 0,8 by 0,6 cm was revealed. What accessory roentgenologic investigations should be used?

2) Male patient, 58-year-old was admitted to the clinic with complaints on frequent urination, macrohematuria. Has been ill for 4 months. Objectively: abdomen is soft, painless, kidneys are not palpable, Pasternatsky's symptom is negative. Prevesical gland is not enlarged, with smooth surface, painless. During hospital stay, total macrohematuria with shapeless blood clots was observed twice. Due to this fact cystoscopy was made: on the lateral wall of urinary bladder rough villous tumor, sizes 2 by 3 cm on a wide basis was revealed. Left orifice is not defined, right one is without changes. What investigation is necessary to carry out to make correct diagnosis, to define state of upper urinary tract?

IX. Control of knowledge (test theme base for variants)

1. What kidney pathology have to be examined with radionuclide methods?
a) nephroptosis
b) duplex collecting system
c) ureteric duplication
d) paranephritis
e) at those diseases that occur with a decrease of functioning parenchyma.

2. Are there any absolute contraindications for kidney radionuclide renography?
a) yes
b) no
c) yes, in patients with diabetes mellitus
d) yes, in patients with allergy to antibiotics
e) yes, in patients with hyperthermia

3. Which method of examination allows studying kidney anatomy and morphology?
a) radionuclide kidney renography
b) plane urography
c) kidney USI
d) dynamic renal scintigraphy
e) chromocystoscopy

4. Patient found bloody urine with no clots. There was no any pain while urination and in lumbar areas. Kidneys are not palpable, it's proection is painless. What should doctor prescribe?

a) hemostatic medications
b) blood creatinine
c) Nechiporenko urine test
d) cystoscopy
e) antibiotics

5. Which methods will help in the differential diagnosis of renal colic and acute surgical pathology?

a) abdominal x-ray
b) chromocystoscopy
c) chest x-ray
d) cystoscopy
e) plane X-ray

6. Is it possible to use ultrasound for the diagnosis of bladder cancer?

a) yes
b) no
c) in men only
d) in women only
e) in case of gross hematuria only

7. Is it possible to provide plain urography for kidney injuries?

a) yes
b) no
c) if suspected bone fracture
d) if the patient is in a comatose
e) if the patient is not in a comatose

8. What's the technic of retrograde cystography if urinary bladder rupture is suspected:

a) introduce 50 ml of contrast material
b) introduce 150 ml kontrostnoyi substances
c) tight filling of the urinary bladder
d) introduce 80 ml of contrast material
e) introduce 120 ml of contrast material

9. Is cystoscopy indicated if urethra rupture is suspected?

a) yes
b) no
c) when urethrorrhagia is presented
d) if the patient is in a comatose
e) when the patient is in not in a comatose

10. What is the most reliable method in the differential diagnosis of nephroptosis and kidney dystopia:

a) angiography with renal arteriography
b) retrograde pyelography
c) radionuclide renography
d) ultrasound investigation
e) plane urography

11. The most reliable methods of diagnosis in crossed kidney dystopia:
a) USI
b) angiography
c) excretory urography (intravenous pyelography)
d) retrograde ureteropyelography
e) plain urography

12. The most accurate method for diagnosis of the current functional status of each kidney separately:
a) ultrasonic scanning
b) rheorenography
c) radionuclide renography
d) computed tomography
e) plain urography

13. What does chromocystoscopy study?
a) ureteral orifices condition
b) glomerular filtration
c) the presence of stenosing and obstructive factors in the upper urinary tract, deep affection of renal parenchyma.
d) the state of the urinary bladder
e) state the urethra

14. What is the most informative methods of renal hemodynamics assessment :
a) endogenous creatinine clearance test
b) Iodine-131 Hippuran for the estimation of renal plasma flow
c) angionephroscintigraphy
d) ultrasound investigation
e) the Rehberg-Tareev test/ Estimated Glomerular Filtration Rate (eGFR)

15. What is the most informative method of the upper urinary tract urodynamics assessing:
a) chromocystoscopy
b) intravenous urography
c) electromyography of pelvis and ureter
d) USI
e) radionuclide rheography

16. What is the most accurate method of urinary bladder urodynamic studying?
a) plain urography
b) uroflowmetry
c) chromocystoscopy
d) X-ray fluoroscopy
e) radionuclide rheography

17. What is the most important contraindications to excretory urography?
a) sensitivity to iodine-based contras
b) shock
c) collapse
d) hyperthermia
e) obesity patients

18. What are the contraindications to retrograde ureteropyelography:
a) acute urethritis, acute prostatitis
b) tuberculosis of the urinary system
c) general weakness
d) the patient's age
e) hyperthermia

19. The optimum amount of contrast material for excretory urography is:
a) 20 mg / kg
b) 2 - 3 mg / kg
в) 5 mg /kg
г) 40 mg/ kg
д) 50 mg / kg

20. The most typical signs of tumors in the kidney excretory urogram:
a) caliceal-pelvis system deformation and tuberous external contour
b) lack of contrast excretion
c) tuberous contour
d) increase of the kidneys' width
e) increase of kidney' lenth

X. Methodological support:

1.Methodical recommendations for students on this topic
2.Theses of the lecture on this topic
3. Set of situational tasks
4. A set of tests on the topic of options
5. Schemes and tables
6. Devices and equipment for practical work

XI. Recommended Books:

A) Basic:

1. Urology. E.M.Shimkus,S.E.Shimkus./Simferopol, IAD CSMU, 2005.
2. Radiation oncology physics: a handbook for teachers and students international atomic energy agency Viena, E.B. Podgorsak Technical Editor.
3. Medical radiology. Radiation oncology. Editors: L. W. Brady, Philadelphia H.-P. Heilmann, Hamburg M. Molls, Munich Technical basis of radiation therapy. Springer-Verlag Berlin Heidelberg 2006.
4. Tanagho Emil A., McAninch Jack W. Smith's Geneal Urology, 17th edition, 2008.
5. Pasiechnikov S.P. Urology. Study guide for practical work for medical students, 2012.
6. Pasiechnikov, S., Saidakova, N., & Kuznetsov, V. Results of the complex systemic prophylaxis against postoperative infectious inflammatory complications in patients with benign prostatic hyperplasia. Urology. 2014.- (3), 5-11.
7. Apolikhin, O. The international epidemiological study of cross infection, urinary tract infections and genitalia male. Infekcionnyj Kontrol'. 2012.- (1), 9-10.
8. Chernenko, V., Chernenko, D., Klyus, A., & Shylo, V. Clinical efficacy of the combined therapy of patients having urolithiasis using the biologically active additions (BAD) "Prolith". Urology. 2011.- (1), 27-32.
9. Kogan, M., Naboka, Y., Ibishev, K., Gudima, I., & Naber, K. Human Urine Is Not Sterile - Shift of Paradigm. Urologia Internationalis. 2015.

10. Sing I. Prospective randomized clinical trial comparing phytotherapy with potassium citrate in management ot minimal burden (d” 8mm) nephrolithiasis. / Sing I. – Urol Fnn . – 2011. – № 3 (2). – P. 75-81.
11. Sas D. J. Incrasing incidence of kidney stones in children evaluated in the emergency department / D. J. Sas. – Pediatr. – 2010. – №157 (1). P. 132-137.
12. Frassetro L. Treatment and hrevention of kidney stones: on update / L. Frassetro. –Am Fam Physician, 2011. – №84 (11). – P. 1234-1242.
13. Modi P, Helfand BT, McVary KT.: Modifications and surgical interventions for benign prostatic hyperplasia are potential confounders of prostate-specific antigen. //Curr Urol Rep 2010;11:224–7.
14. Roehrborn C.G., McConnel J.D.: Etiology, Pathophysiology, Epidemiology, and Natural History of Benign Prostatic Hyperplasia. Chapter 38. //Campbell's Urology 8th edition, WB Sauders, 2002.

Additional

1. Clinical Radiology made ridiculously simple. Hugue Ouellette, M.D. Patrice Tetreault, Published by Med Master, Inc. P.O. Box 640028 Miami FL 33164.
2. Атлас-руководство по урологии. Под ред. А.Ф.Возианова, А.В. Люлько.-Днепропетровск, 2002.-Т.1,2,3.

METHODICAL DEVELOPMENT OF A PRACTICAL LESSON

TOPIC: ACUTE PYELONEPHRITIS. CHRONIC PYELONEPHRITIS.

Place - study room, wards.

I. Actuality of the theme:

Pyelonephritis is the most common kidney disease in people of different sex and age, from early childhood. Disturbance of urine outflow, hospitalization and instrumental manipulations play an important role among the etiological factors of acute and chronic pyelonephritis. Acute and chronic pyelonephritis make 2/3 of all urological diseases. The leading symptom is renal dysfunction, which can cause serious complications: the transition from serous phase into purulent, bacteriemic shock, secondary contracted kidney, renal hypertension, pyonephrosis requiring surgical treatment (nephrectomy).

II. The final results of mastering the topic:

In accordance with the requirements of the master's level standard, students after studying this topic should.

Student must know:

- Classification of acute and chronic pyelonephritis by the course of the disease. -Etiology and pathogenesis, clinical manifestations of acute and chronic pyelonephritis.
- Diagnostics and treatment of acute and chronic pyelonephritis.

A student must be able to:

- ✓ Analyze the causes of acute and chronic pyelonephritis (lecture materials, textbooks).
- ✓ Explain methods of clinical studies (past history, examination, and palpation), findings of laboratory methods (patients, samples of analysis).
- ✓ Make a chart of the examination and interpret the results of ultrasound, X-ray examination methods, RRG (radionuclide X-ray) (set shots).
- ✓ Analyze the peculiarities of the clinical course of acute and chronic pyelonephritis (patients, lecture materials, textbooks).
- ✓ Diagnose and make a scheme of treatment plan of general illness (patients, lecture materials, textbooks).

Practical skills consolidated by the practical lesson:

Assessment of general analysis test rates (sample analysis)

Have specialized (subject) competences

Special (professional, subject) competencies					
1.	The ability to make a provisional clinical diagnosis of an illness.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children. To know the standard examination methods and diagnostic algorithms. To know the algorithms of	To know how to make a physical examination of a patient; to know how to take a reasoned decision concerning finding a guiding clinical symptom or syndrome; to know how to make a provisional diagnosis	To keep medical records of a patient (an outpatient/inpatient card, an individual child development card) basing on the practice guidelines.	To be responsible for taking reasoned decisions and actions that concern making a provisional diagnosis of an illness keeping to the ethical and legal rules.

		finding the guiding symptoms and syndromes (according to the list 1) and of making provisional and clinical diagnoses (according to the list 2). To know the methods of laboratory testing and instrumental examination (according to the list 3). To have the knowledge of patient's state evaluation.	(according to the list 2); to know how to prescribe a laboratory test or an instrumental examination of a patient (according to the list 3) by using standard methods.		
2.	The skills of gathering information about a patient.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the methods and standard schemes of questioning and examining patients of different age groups. To know the methods of prenatal development evaluation. To know the stages and methods of psychomotor and physical development evaluation in pediatrics.	To know how to talk to a patient (including a child and his/her parents) basing on the algorithms and standards, how to examine a patient using standard methods. To know how to examine psychomotor and physical development of a child. To know how to evaluate health status of a person (including one of a child).	To make appropriate medical records concerning the health status of an adult or a child or prenatal development of a fetus.	To be responsible for a qualified information gathering that includes an interview, questioning, examination, palpation, percussion of organs and systems and timely evaluation of a person's health status, psychomotor and physical development of a child and prenatal development of a fetus. To be responsible for responding appropriately.
3.	The ability to evaluate the results of laboratory tests and instrumental examination.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the standard methods of laboratory tests and instrumental examination (according to the lest 4).	To know how to analyze the results of laboratory tests and instrumental examinations and evaluate the information about the diagnosis of a patient using these results (according to the list 4).	To prescribe reasonable laboratory tests and instrumental examinations and evaluate their results (according to the list 4).	To be responsible for taking decisions concerning the evaluation of the results of laboratory tests and instrumental examinations in different age groups of children.
4.	The ability to diagnose the emergency cases.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological	To know how to evaluate a person's status and make a diagnosis (according to the list 3) by taking a	To take a reasonable decision concerning the evaluation of a person's condition, diagnosis and	To be responsible for the timely and effective medical measures of emergency condition

		peculiarities of children of different age groups and standard methods of examining patients (at home, in the street, in a medical institution) under the circumstances of lacking information.	reasonable decision using the standard methods under the circumstances of lacking information.	taking necessary medical measures depending on the person's condition sticking to the corresponding ethic and legal rules under any circumstances. To fill in the appropriate medical records.	diagnosing.
5.	The ability to fill in the medical records.	To know the system of the official documents circulation in doctor's and pediatrician's professional activity including modern information technologies.	To know how to find a source and location of the necessary information depending on its type. To know how to process the information and analyze it.	To get the necessary information from a certain source and make corresponding conclusions basing on its analysis.	To be responsible for the full and qualified information analysis and for the conclusions made basing on it.
6.	The ability to choose an optimal radiological investigation for different organs and systems.	To know the basic radiological investigation, the main advantages and disadvantages of every radiological investigation.	To know how to choose an optimal radiological investigation for different organs and systems .	To make one's own conclusions on the chosen radiological investigation and represent them to a patient, his/her parents and other specialists.	To be responsible for the reasonable prescription of a radiological investigation and choosing an optimal radiological investigation for different organs and systems.
7.	The ability to analyze the skialogic pattern of an X-ray image, CT and MR scans, ultrasonic and Doppler scans.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups, pathologic anatomy and physiology and principles of diagnostic imaging.	To be skilled in analyzing the diagnostic images obtained by using different radiological investigations.	To make conclusions based on analyzing and processing of the information from the X-ray images, tomographic images, MRI scans, ultrasonic scans, scintiscans.	To be responsible for qualified and timely processing and analyzing of the information from the different types of diagnostic images.

III. Term of studies 4 acad. hours (or other)
IV. Plan of the class:

Stages of the lesson	**Time**	**Equipment**
1.Organisation part of the visit control. Introducing students to the topic, purpose and plan of the lesson. Definition of evaluation criteria.	5	Training journal
2.Introduction: The teacher's control of the basic level of students' knowledge on this topic on the basis of their independent preparation for the lesson by the method of oral questioning or input test	20	Tests, standards,

control (a list of questions or test samples in section V). 3. The main part: Studying, taking notes, students discussing and explaining by the teacher the most important terms, concepts, certain problematic issues of a topic using methodological recommendations for students. Analysis and assimilation of the graphological structure of the topic. Briefing. Performing a practical task according to options and forms (group and individual). Verification and evaluation of completed tasks. 4. Self-student work: Performing individual situational tasks according to the options proposed by the teacher. Individual control of decision results. 5. The final part: Final test control of knowledge and skills on the topic. Grades for each student. Homework. academic break 180 minutes together	 120 20 15 10	 Textbook, lecture notes, guidelines, medical history, patient demonstration Situations of tasks, educational analyzes. training journal Training journal

V. List of control questions:

- List inflammatory diseases of the kidneys.
- Name the main etiological agents of acute and chronic pyelonephritis.
- State the most characteristic symptoms of inflammation of the kidneys.
- Name what ways microorganisms may geti ntot he kidney.
- What is the difference between primary and secondary pyelonephritis.
- Name laboratory, instrumental, radiographic and other methods of examination of acute and chronic pyelonephritis.
- Role of USE and intravenous urography in diagnosis of acute and chronic pyelonephritis.
- Complications of acute and chronic pyelonephritis
- Indication for the operation.
- What operations are used for treatment of the patients?
- What is the plan of follow-ups of the patients with chronic pyelonephritis?

VI. Structural-logical scheme of the lesson content:

Acute and chronic pyelonephritis

	Educational items	
Contributing factors	Disturbance of urodynamic Abnormalities of renal development Instrumental manipulations	
Stages of the disease	Acute pyelonephritis	
Diagnostics	Palpation. Ultrasound examination, computer tomography, X-ray examination, Biopsy Chronic pyelonephritis	Severe, purulent, apostematous nephritis, carbuncle of the kidney, abscess of the kidney Renal necrotic papillitis Acute stage

		Latent stage Stage of remission
Clinical picture	Increasing of body temperature Fever Pain in lumbar area General weakness Changes in urine	
Methods of diagnosis	Clinical examination Laboratory examination (changes in urine and blood) Endoscopy X-ray examination, Ultrasound examination, Radionuclide renal scan (RRS), CT thermography Biopsy of the kidney(nephrosclerosis)	Increasingofkidney Chromocystoscopy (disturbance of urodynamics Plain, excretory urography Retrograde urethrography Increasing or decreasing of kidney in size, disturbances of kidney function Changes of kidney structure
Diagnostic signs	Disturbances of kidney function Changes of urine and blood Change of kidney structure Increasing or decreasing of kidney in size Nephrosclerosis	
Complications of acute pyelonephritis	Chronic pyelonephritis	Chronicpyelonephritis (CPN), Acutepyelonephritis (APN), nephrogenic hypertensionarterial hypertension pyonephrosis
Treatment	Surgical, conservative	Drug treatment Sanatorium and spa treatment Dietotherapy

VII. The most important terminological concepts and theoretical issues of the topic

Contents of the lesson

Pyelonephritis isa non-specific infectious and inflammatory process observed in patients with renal and upper urinary tract disturbance. Colon bacillus, staphylococci, proteus, enterococci etc. are most often causative agents of pyelonephritis. Microorganisms can penetrate into the kidney in several ways: hematogenous, urinogenous and lymphogenous ascending way. Such general local factors as supercooling, avitaminosis, infectious disease of urinary tract, disturbance of urine outflow from the kidney play an important role in the development of inflammation in the kidney.

There are primary and secondary pyelonephritis. In the primary pyelonephritis the outflow of urine is not impaired, secondary process occurs in case of urinary stases. There are the following types of pyelonephritis by its course: 1) acute (serous, purulent), 2) chronic and 3) recurrent

Types of acute purulent pyelonephritis are the following: pertaining to apostema, carbuncle and abscess of kidney. There are three phases of the process activity in the course of chronic pyelonephritis: a) an active inflammatory process b) latent course c) remission or clinical recovery.

The main symptoms of acute pyelonephritis is pain in the lumbar area, chills, significant increase of body temperature. Increased body temperature is often repeated inpurulent forms of

inflammation, temperature increasing may repeat several times a day. A variety of clinical picture which is evident by moderate pain in the lumbar area, leucocituria, bacteriuria, thirst, dry mouth etc. is typical for chronic pyelonephritis.

Diagnosis of acute serous pyelonephritis: laboratory methods play a major role; bacteriuria is revealed, the number of microorganisms in 1 ml of urine is determined; the nature of microorganisms, the presence of leucocituria, the number of active white blood cells and Sternheimer-Malbin cells are revealed.

A renal ultrasound scanning plays an important role for the diagnosis of pyelonephritis. The size, shape and contours of the kidney and the thickness of the parenchyma are determined with echo scanning. The method allows to obtain information on the dilatation ofcalyx and pelvic system in disturbance of the passage of urine.

X-ray and radionuclide methods of examination play important role in the complex of diagnostic methods of pyelonephritis.

Excretory urography allows to evaluate the anatomical state and function of the urinary tracts, it alsoreveals signs of kidney lesion, calyx and pelvic system and ureters, and controls the dynamics of pathological process.

Radionuclide methods of examination are used to determine the morphological and functional disorders of the kidney.

Thermography and thermal imaging are used as extra methods.

Scheme of treatment of patients with acute pyelonephritis depends on the nature of the process (primary or secondary), its shape (single or duplex). Obligatory condition of secondary nephritistreatment is the elimination of causes of disturbance of urine passage and blood circulation in the kidney.

Prognosis of acute primary pyelonephritis inwell-timedperformed antibiotic therapy is favorable.If the process becomes chronic,the prognosis is unfavorable. The ultimate result of chronic pyelonephritis is secondary contracted kidney, chronic renal failure, renal hypertension, pyonephrosis.

VIII. Instructions and explanations on implementation practical assignment (sample typical task)

1) A 30-year-old patient complains on pain in lumbar area, the pain increases while breath in and out; there is increasing of body temperature. He has been ill for last three days.

The kidneys are not palpable and Pasternatsky symptom is doubtful in objective examination. Tough breathing is heard in auscultation. There are no pathologic changes in urine analysis and there is slight increasing of ESR in blood analysis.

а) Is it possible to diagnose acute or chronic pyelonephritis?

б) What is necessary to make a diagnose?

в) What are extra methods of examination?

The model of answer:

USE, plain excretory urography, lung examination are extra methods of examination.

2) A 45–year-old female patient A. has been hospitalized with complains of pain in lumbar area; pain is more severe in the left side, there is increasing of body temperature. We know from the past history that thepatient suffers from chronic pyelonephritis and urolithiasis. Objective examination reveals soft stomach; there is moderate pain in the left hypochondrium.Kidneys are not palpable, Pasternatsky symptom is positive in the left. Urine analysis reveals leucocituria. Blood analysis reveals elevated leukocytosis and ESR.

Ultrasound examination did not reveal pathological changes in the right kidney. Cavity system extremely dilated, parenchyma is thickened, and concretions have not been revealed in the left kidney.

Dilatation of left ureter in upper third is to 0,7 cm.

Diagnosis, extra methods of examination, treatment, prognosis. The model of the answer:

Urolithiasis, concrement of ureter. Exacerbation of chronic pyelonephritis. Extra methods of examination: plain, excretory urography, renography.

Treatment:

Catheterization of the left ureter, surgical treatment, extracorporal shock-wave lithotripsy (ESWL), KLT, conservative treatment of chronic pyelonephritis.

3) A 25-year-old female patient has been hospitalized to the clinic. She has got pain in lumbar area; the pain is more severe in the right; there is temperature increasing 37,5°C. Stomach is soft, painless in objective study. Low pole of the right kidney is palpated in horizontal and vertical position, Pasternatsky symptom is positive in the right. Urine analysis reveals leucocituria. Blood analysis reveals insignificant elevation of white blood cells level and ESR. There is insignificant dilatation of cavity system of the right kidney.

Models of solving.

You may think of right - side nephroptosis. Secondary acute right - side pyelonephritis. It is necessary to make plain and excretory urogram in horizontal and vertical position of the patient to confirm the diagnosis. Treatment is conservative, surgical treatment is fixation of the kidney (nephropexy).

4) A 55-year-old female patient has been hospitalized to the clinic with pain in lumbar area in the right side. The past history contains information that she has been suffering from right-side pyelonephritisfor 15 years. She has also had hypertension for last 3 years.

Objective study revealed soft, painless stomach. Kidneys are not palpable, Pasternatsky symptom is badly positive in the right. Decreasing of the right kidney in size is noted in ultrasound examination. Urinalysis revealed insignificant number of leucocytes; blood analysis is without any pathology.

Models of solving.

Based on the conditions of the problem the patient has chronic pyelonephritis. There is secondary contracted kidney, renal hypertension. For further diagnosis it is necessary to make excretory urography, PP, if there is not function of the right kidney. Treatment is surgical (nephrectomy on the right).

5) A 60-year-old male patient complains of pain in lumbar area, increasing of body temperature to 38°C, fever. Objective study revealed pale cutaneous coverings. In palpation there is tenderness and muscle tension in the right hypochondrium and tumourous movable formation is also palpable in the right hypochondrium, Pasternatsky symptom is badly positive in the right.

Symptoms	Increasing of body temperature and pain in lumbar area						
	Lower partial pneumonia	Acute cholecystitis	Pancreatitis	Paranephritis	Infectious diseases	Urolithiasis	Pyelonephritis
Changes in urine	-	-	-	-	-	+	+
Changes in blood	+	+	+	+	+	+	+
USE	-	-	-	+	-	+	+
RRG	-	-	-	+	-	+	+

Excretory urography	-	-	-	-	-	+	+
Biochemistry of blood (urea, cratinine)							+
Thermography	+	-	-	+	-	+	+

Test the differential diagnosis

Symptoms of disease	Urinary kidney	Glomeruloneph ritis	Renal colic	Acute pyelonephritis
Fever	+	-	-	+
Increasing of body temperature	+	-	-	+
Painin lumbar area	+	+	+	+
Nausea, vomiting	-	-	+	+
Hematuria	+	+	+	+
Anuria		-	+	-
Absence of appetite	+	+	+	+
Loss of weight	+	+	-	+
Changes in kidney structure in USE	+	+	-	+
Disturbance of urodynamics	-	-	+	+
The presence of active leucocytes in urine				+

Answer: acute right side pyelonephritis.

IX. Tasks for independent work of students (examples of situational problems and their solutions).

Acute and chronic pyelonephritis.

Task	Instruction to the task	Independent work
1. Review topographical	1.Draw a diagram of kidneys, ureters and bladder	

anatomy of the kidneys and bladder		
2. Study the etiopathogenesis of acute and chronic pyelonephritis	2. Show the structure of parenchimaof kidneyson the diagram(cortical and marrow substance, CPS. 1. Read lecture material. 2.Explain the age dependence of the frequency of disease (acute and chronic pyelonephritis). 3. Make a table of possibility of kidney disease on the basis of the following features: а) abnormality of the kidney development; б) function of the bladder; в) function of the ureters.	
3. Clinical picture	Name leading symptoms of acute and chronic inflammation of the kidneys	
4. Diagnosis of acute and chronic inflammation of the kidneys	1.Specify the main features of the disease on palpation 2. Name typical signs of: а) Acute and chronic pyelonephritis according excretory orography; б) ultrasound examination; в) radioisotope reography. Pay attention to differences, structure of parenchyma of kidney, function of kidney in acute and chronic inflammation	
5. Treatment	Specify: а) indications for the conservative or surgical treatment; б) indicationfornephrectomy; в) principles of treatment of primary and secondary pyelonephritis; г) methods of surgical treatment	

X. Control of knowledge (test theme base for variants)

1. According to the WHO data, which disease took the second place after inflammatory diseases of the upper respiratory tract?
a) glomerulonephritis
b) kidney amyloidosis
c) renal tuberculosis
d) pyelonephritis
e) diabetic nephrangiopathy

2. Preferably, what part of the kidney parenchyma is affected with pyelonephritis?
a) the kidney capsule
b) interstitial tissue
c) papilla
d) cortical substance
e) calix

3. What are the most frequent causative agents of acute pyelonephritis?
a) Gram-positive flora
b) Gram-negative flora

c) Koch's bacillus
d) equally often Gram-positive and Gram-negative flora
e) viruses

4. Is the incidence of pyelonephritis increased in older men?
a) yes
b) no
c) when they work in a cold climat
d) when they work in a hot climat
e) when they are sick with diabetes mellitus

5. What is the most important local factor in development of pyelonephritis?
a) kidney skeletopy
b) the size of the kidney
c) the thickness of the parenchyma
d) paranephral kidney tissue condition
e) violation of the urine outflow

6. What is the bacground of pyelonephritis cause?
a) the flow of blood in the pulmonary circulation
b) disturbed blood circulation
c) diabetes mellitus
d) the presence of medicamentall allergy
e) cardiovascular insufficiency

7. Pathogenetic background of acute pyelonephritis is:
a) subfebrile body temperature
b) increase of body temperature
c) decrease in body temperature
d) increase of body temperature, fever and profuse sweating
e) pain in the kidney

8. What are the main symptoms of primary acute pyelonephritis?
a) increase diuresis
b) increase of body temperature, fever and profuse sweating
c) pain in the kidney
d) dry mouth
e) subfebrile body temperature

9. What is the typical urine change in pyelonephritis?
a) bacteria
b) erythrocytes
c) salt
d) mucus
e) elevated specific gravity

10. What does excretory urography reveal in acute primary pyelonephritis?
a) lumbar muscle contour
b) normal or slightly decreased kidney function
c) kidney size decrease
d) kidney pelvis dilation

e) hydrocalix

11. Do you consider it's appropriate to prescribe broad spectrum antibiotic in case of acute pyelonephritis?
a) no
b) yes
c) only with adequate diuresis
d) only in elderly patients
e) only for patients with diabetes mellitus

12. What should we do primarily in acute secondary pyelonephritis:
a) make a biopsy of the kidney
b) to make catheterization of ureter and kidney pelvis
c) to prescribe UHF procedure on kidney
d) stimulate the diuresis
e) to recommend the bed rest

13. What antibiotics should be excluded from treatment of gestational pyelonephritis?
a) tetracycline
b) penicillin
c) cephalosporins
d) macrolide
e) no any antibiotics should be excluded

14. What are the most frequent symptoms of chronic pyelonephritis?
a) headache
b) tachycardia
c) fatigue, weakness, loss of appetite
d) emotional excitement
e) depression

15. Chronic pyelonephritis is characterized by:
a) acute pain in the kidney
b) burning pain in the back
c) periodic, aching pain at rest
d) shooting pain
e) high body temperature

16. Patient 30 y.o. 10 days after the peritonsillar abscess felt body temperature increase up to 39 with fever, profuse sweat, appeared dull pain in the right kidney. While palpation kidney is not palpable, the proection of the right kidney is painful, positive Pasternatsky symptom. In urinalysis: protein 0.066 g / l bacteria, white blood cells – lots WBC/hpf. Plain urography - absence of m. psoas contour, right side scoliosis, right kidney contour is increased. What caused such a disease of the patient?
a) acute right side paranephritis
b) intercostal neuralgia
c) acute cholecystitis
d) pancreatitis
e) perforated stomach ulcer

17. The patient 56 y.o. suffer with dull pain in the lumbar region for 10 years. While palpation kidneys are not palpable. Pasternatsky symptom is negative. Nechyporenko urine test:

leukocytes -104 / ml, active white blood cells - 30%, bacteria - 5×104 / ml. Chronic pyelonephritis was diagnosed. What is the optimal duration of the chronic pyelonephritis treatment?
a) more than a year
b) 1 month
c) 2 months
d) 2.5 months
e) 3 months

18. Patient 50 y.o. was admitted with a complaint of a dull pain in the right lumbar region, periodic increase of body temperature up to 39 with fever and profuse sweat, the presence of clear urine at this period. During the normalization of the body temperature and reducing the pain, urine became cloudy and purulent. Objective status: tongue is dry. While palpation right kidney is tuberose, moderately painful and decreased in phisilogical mobility. In urinalysis: leukocytes lots-WBC/hpf , protein 0.099 g / l. Cystoscopy-discharge of pus from the right orifice. What pathological process led to such a state?
a) paranephritis
b) pyonephrosis
c) glomerulonephritis
d) kidney tumor
e) urolithiasis

XI. Methodological support:
1.Methodical recommendations for students on this topic
2.Theses of the lecture on this topic
3. Set of situational tasks
4. A set of tests on the topic of options
5. Schemes and tables
6. Devices and equipment for practical work

XII. Recommended Books:

A) Basic:

1. Urology. E.M.Shimkus,S.E.Shimkus./Simferopol, IAD CSMU, 2005.
2. Radiation oncology physics: a handbook for teachers and students international atomic energy agency Viena, E.B. Podgorsak Technical Editor.
3. Medical radiology. Radiation oncology. Editors: L. W. Brady, Philadelphia H.-P. Heilmann, Hamburg M. Molls, Munich Technical basis of radiation therapy. Springer-Verlag Berlin Heidelberg 2006.
4. Tanagho Emil A., McAninch Jack W. Smith's Geneal Urology, 17th edition, 2008.
5. Pasiechnikov S.P. Urology. Study guide for practical work for medical students, 2012.
6. Pasiechnikov, S., Saidakova, N., & Kuznetsov, V. Results of the complex systemic prophylaxis against postoperative infectious inflammatory complications in patients with benign prostatic hyperplasia. Urology. 2014.- (3), 5-11.
7. Apolikhin, O. The international epidemiological study of cross infection, urinary tract infections and genitalia male. Infekcionnyj Kontrol'. 2012.- (1), 9-10.
8. Chernenko, V., Chernenko, D., Klyus, A., & Shylo, V. Clinical efficacy of the combined therapy of patients having urolithiasis using the biologically active additions (BAD) "Prolith". Urology. 2011.- (1), 27-32.
9. Kogan, M., Naboka, Y., Ibishev, K., Gudima, I., & Naber, K. Human Urine Is Not Sterile - Shift of Paradigm. Urologia Internationalis. 2015.

10. Sing I. Prospective randomized clinical trial comparing phytotherapy with potassium citrate in management ot minimal burden (d” 8mm) nephrolithiasis. / Sing I. – Urol Fnn . – 2011. – № 3 (2). – P. 75-81.
11. Sas D. J. Incrasing incidence of kidney stones in children evaluated in the emergency department / D. J. Sas. – Pediatr. – 2010. – №157 (1). P. 132-137.
12. Frassetro L. Treatment and hrevention of kidney stones: on update / L. Frassetro. –Am Fam Physician, 2011. – №84 (11). – P. 1234-1242.
13. Modi P, Helfand BT, McVary KT.: Modifications and surgical interventions for benign prostatic hyperplasia are potential confounders of prostate-specific antigen. //Curr Urol Rep 2010;11:224–7.
14. Roehrborn C.G., McConnel J.D.: Etiology, Pathophysiology, Epidemiology, and Natural History of Benign Prostatic Hyperplasia. Chapter 38. //Campbell's Urology 8th edition, WB Sauders, 2002.

Additional

1. Clinical Radiology made ridiculously simple. Hugue Ouellette, M.D. Patrice Tetreault, Published by Med Master, Inc. P.O. Box 640028 Miami FL 33164.
2. Атлас-руководство по урологии. Под ред. А.Ф.Возианова, А.В. Люлько.-Днепропетровск, 2002.-Т.1,2,3.

METHODICAL DEVELOPMENT OF A PRACTICAL LESSON

TOPIC: CYSTITIS, PROSTATITIS, URETRITIS, CAVERNITIS, EPIDIDIMITIS. PYONEPHROSIS, CYSTALGIA, ACUTE PARANEPHRITIS.

Place - study room, wards.

Actuality of the theme:

Specific inflammatory diseases (tuberculosis of the organs of urogenital system).

Renal tuberculosis, tuberculosis of bile ducts and tuberculosis of male genital organs is one of the most serious urological diseases. It takes the first place among extrapulmonary TB.

In clinical practice all urogenital organs without exception can be involved with tuberculosis. Tuberculosis most often affects kidneys and epididymis among male genital organs.

About 1 billion people of the world are infected and 10 million people having clinical signs of tuberculosis consult a doctor annually. 20% of cases of extrapulmonary tuberculosis is renal tuberculosis. Difficulties of diagnosis, the tendency to spread of urogenital tuberculosis determine the topicality of the given theme.

Just about 60% of the urological diseases are nonspecific suppurative inflammatory diseases of the urinary organs. The patients with the infection of the urinary tract is often turned to the therapists, venerologists, gynecologists, what makes these theme actual for physicians in any specialty.

Inflammatory diseases of retroperitoneal space (IDRS) affect people ofany ageandtheyoccurin the practice of doctors of various specialties, most oftenin physicians, pediatricians, obstetricians, gynecologists and surgeons. In many cases IDRS can run asymptomatically or with symptoms thatshows to another inflammatory process elsewhere. These processes are often very difficult to identify and differentiate from other inflammatory processes. A variety of pathogens and the fact that the first symptoms of these diseases usually occur already during the development of purulent process in the relevant area, or in few days or even weeks after they occur, causes the importance of careful taking of medical history and determines which infections were in patients previously. It should be noted that the inadequate treatment of these processes can be complicated and these complications can threaten the patient life. This makes the importance of this problem.

A. Paranephritis (PN) – this is the inflammation of the perirenal fiber. There are primary and secondary paranephritis.Primary paranephritis it is a result of the infection in a hematogenous way from the suppurative cells or focus. It is located outside the kidney.It promotes by injury, lumbar injury, hypothermia, etc.

Secondary the paranephritis occurs as a complication of the inflammatoryprocesses in the kidney. It is often localized on the left and has acute and chronic process.

Classification.

For localization:bottom (the lower end) of the kidney, upper (the top end) of the kidney, front(between the kidney and the colon) back (between the kidney and the lumbar muscles) total (all tissue)

Etiology. The primary paranephritis is often caused bygram-positive flora. The secondary process is caused by Escherichia. Coli\colon bacillus, bacteria (Rroteus, Pseudomonas). In acute paranephritis St. Aureus is often shown.

The main symptoms of acute paranephritis:

- high temperature;
- chill;
- pain in the lumbar and the hypochondrium;

- tension of the abdominal muscles;
- scoliosis with distortion towards the healthy kidney;
- leukocytosis;
- with neurogenic PN - pyuria;
- with hematogenous PN - proteinuria, cylindruria, microhematuria.

Types of PN:

- infiltrative;
- purulent;
- sclerotic

Pathogenesis. The process of renal tissue develops as in the next scheme: infiltrative-swelling changes - fester - cicatricial sclerosis. When the process isdragged out the manurespread towards to the lumbar region:break under the skin in thetendon space under the 12thrib or the lumbar triangle above the crest of the ilium - swelling; manure goes down in the femoral triangle area - flexion contracture of the hip joint.

Chronic paranephritisis a result of untreated acute paranephritis. It occurs as a complication of chronic calculous pyelonephritis.

Main symptoms:

- Dull pain in lower back ;
- Moderate rising of the temperature;
- Leykograma shifts to the left;
- Increase of ESR;
- exacerbation of the urinary symptoms.

Diagnostics. Instrumental methods.

Radioscopy – reducing of the amplitude of the excursion of diaphragm on the affected side, reactive pleural effusion in the sinus on the affected side.

Plain urograms - the effaced contour of the lumbar muscles.

Excretory urography - reduced function.

Puncture around the renal substance - pus (perform the opening the abscess or the explorative lumbotomy).

- Ultrasound – it is a cavity surrounded by a capsule with fluid.

The treatment is conservative, if it is ineffectiveit will be operational treatment. And the acute condition of PN is conducted by subcostal retroperitoneal lymbotomia. In chronic PN – the conservative or also the operational treatment. It should be noted that the organ-saving operations is unsuitable.

B. Retroperitoneal fibrosis (Ormond's disease)

Ormond's disease can be single or bilateral. It is localized at the level of 4th - 5th lumbar vertebrae and lower. The variants of the course are the tube shape and the tu-case.

Histologically there are three phases of chronic nonspecific inflammation:

Diffuse infiltration.

Fibrous connective tissue changes with the progression of collagen fibers.

Sclerosing and shrinkage of fibrous tissue.

Clinically defined:

dull attacks of pain in the lumbar area;

fatigue;

increased blood pressure;

-renal deficiency.

Diagnostics. Instrumental methods:

Excretory urography;

Retrograde ureteropelography and antegrade pelouretrohraphy;

Radionuclide methods.

The corticosteroids is used for the conservative treatment, these drugs promote the resorption. The surgical methods are also used: ureteroliz, the resection of the ureter, the ureter replacement, autotransplantation of the kidney.

Educational aims.

Studying the basic concepts of the urinary infection. Make the imagination about the clinic, the diagnosis and the treatment of the inflammatory diseases of the lower urinary tract and the male genitalia.

II. The final results of mastering the topic:

In accordance with the requirements of the master's level standard, students after studying this topic should

Know:

- ✓ Main factors of tuberculosis etiopathogenesis.
- ✓ Clinical and radiological classification of tuberculosis.
- ✓ Data of physical, laboratory, radiographic, ultrasonic methods of examination.
- ✓ Differential diagnostic of tuberculosis with other diseases.
- ✓ Principles of tuberculosis treatment.
- ✓ Main factors of etiopathogenesis of paranephritis and Ormond's disease
- ✓ Classification;
- ✓ Clinical symptoms;
- ✓ Significance of laboratory research methods for the diagnosis;
- ✓ Mainfeatures according to data of X-ray, ultrasoundand radioisotope research methods;
- ✓ Principlesoftreatment, indicationsforconservativeand surgical treatment;
- ✓ Principlesof antibacterial therapy;
- ✓ Notionofurosepsisandprinciples of its treatment;
- ✓ What is the urinary tract infection.
- ✓ Cystitis (classification, clinical picture, diagnosis, treatment).
- ✓ Urethritis.
- ✓ Prostatitis (classification, clinical picture, diagnosis, treatment, prognosis).
- ✓ The diseases of the male external genitalia.

A student must be able to:

- ➢ Analyse the causes of the disease (lecture materials, textbooks).
- ➢ Interpret methods of clinical examination (past history, samples of analysis), data of laboratory examination (patients, samples of analysis).
- ➢ Interpret the results of of X-ray, ultrasound, radionuclide methods of examination (set of images).
- ➢ Make a scheme of examination and treatment of the patients with tuberculosis of urogenital system organs (lecture materials, textbooks).
- ➢ Determine the principles of therapeutic approach in tuberculosis of urogenital system organs (lecture materials, textbooks).
- ➢ - Identify leukocyturia (samples of analysis);
- ➢ Interpret the data of bacteriological urinanalysis (samples of analysis);
- ➢ Apply instrumental methods for the diagnosis of IDRS (set of instruments);
- ➢ Identify principles of treatment strategy for IDRS (lecture materials, student'sbooks);
- ➢ Prescribe drugs to treat IDRS (Inflammatory diseases of retroperitoneal space) (lecture materials).
- ➢ Carry out the research of the male genetalia (dummy patient).
- ➢ Identify the leykocyturia (samples of analysis).
- ➢ Interpret the data of the bacteriological examination of urine, the prostate secretion of the prostate (samples of analysis).

- Explain the spermogram (samples of analysis).
- Make out a prescription of drugs which is commonly used (lecture materials).

Have specialized (subject) competences

Practical skills are reserved on practical training lessons:
Assessment ofthe indicators of biochemical analysis of blood (samples of analysis).
Practical skills are reserved in practice: Catheterization of the bladder with the elasticcatheter.
Rules of performing and assessment of cystoscopy and chromocystoscopy results (dummy, atlas).

Have specialized (subject) competences

Special (professional, subject) competencies					
1.	The ability to make a provisional clinical diagnosis of an illness.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children. To know the standard examination methods and diagnostic algorithms. To know the algorithms of finding the guiding symptoms and syndromes (according to the list 1) and of making provisional and clinical diagnoses (according to the list 2). To know the methods of laboratory testing and instrumental examination (according to the list 3). To have the knowledge of patient's state evaluation.	To know how to make a physical examination of a patient; to know how to take a reasoned decision concerning finding a guiding clinical symptom or syndrome; to know how to make a provisional diagnosis (according to the list 2); to know how to prescribe a laboratory test or an instrumental examination of a patient (according to the list 3) by using standard methods.	To keep medical records of a patient (an outpatient/inpatient card, an individual child development card) basing on the practice guidelines.	To be responsible for taking reasoned decisions and actions that concern making a provisional diagnosis of an illness keeping to the ethical and legal rules.
2.	The skills of gathering information about a patient.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the methods and standard schemes of questioning and examining patients of different age groups. To know the methods of prenatal development	To know how to talk to a patient (including a child and his/her parents) basing on the algorithms and standards, how to examine a patient using standard methods. To know how to examine psychomotor and physical development of a child. To know how to evaluate health status of a	To make appropriate medical records concerning the health status of an adult or a child or prenatal development of a fetus.	To be responsible for a qualified information gathering that includes an interview, questioning, examination, palpation, percussion of organs and systems and timely evaluation of a person's health status, psychomotor and physical

		evaluation. To know the stages and methods of psychomotor and physical development evaluation in pediatrics.	person (including one of a child).		development of a child and prenatal development of a fetus. To be responsible for responding appropriately.
3.	The ability to evaluate the results of laboratory tests and instrumental examination.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the standard methods of laboratory tests and instrumental examination (according to the lest 4).	To know how to analyze the results of laboratory tests and instrumental examinations and evaluate the information about the diagnosis of a patient using these results (according to the list 4).	To prescribe reasonable laboratory tests and instrumental examinations and evaluate their results (according to the list 4).	To be responsible for taking decisions concerning the evaluation of the results of laboratory tests and instrumental examinations in different age groups of children.
4.	The ability to diagnose the emergency cases.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups and standard methods of examining patients (at home, in the street, in a medical institution) under the circumstances of lacking information.	To know how to evaluate a person's status and make a diagnosis (according to the list 3) by taking a reasonable decision using the standard methods under the circumstances of lacking information.	To take a reasonable decision concerning the evaluation of a person's condition, diagnosis and taking necessary medical measures depending on the person's condition sticking to the corresponding ethic and legal rules under any circumstances. To fill in the appropriate medical records.	To be responsible for the timely and effective medical measures of emergency condition diagnosing.
7.	The ability to analyze the skialogic pattern of an X-ray image, CT and MR scans, ultrasonic and Doppler scans.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups, pathologic anatomy and physiology and principles of diagnostic imaging.	To be skilled in analyzing the diagnostic images obtained by using different radiological investigations.	To make conclusions based on analyzing and processing of the information from the X-ray images, tomographic images, MRI scans, ultrasonic scans, scintiscans.	To be responsible for qualified and timely processing and analyzing of the information from the different types of diagnostic images.

III. Term of studies 4 acad. hours.

IV. Plan of the class:

Stages of the lesson	**Time**	**Equipment**
1.Organisation part of the visit control. Introducing students to	5	Training journal

the topic, purpose and plan of the lesson. Definition of evaluation criteria. 2.Introduction: The teacher's control of the basic level of students' knowledge on this topic on the basis of their independent preparation for the lesson by the method of oral questioning or input test control (a list of questions or test samples in section V). 3. The main part: Studying, taking notes, students discussing and explaining by the teacher the most important terms, concepts, certain problematic issues of a topic using methodological recommendations for students. Analysis and assimilation of the graphological structure of the topic. Briefing. Performing a practical task according to options and forms (group and individual). Verification and evaluation of completed tasks. 4. Self-student work: Performing individual situational tasks according to the options proposed by the teacher. Individual control of decision results. 5. The final part: Final test control of knowledge and skills on the topic. Grades for each student. Homework. academic break 180 minutes together	 20 120 20 15 10	 Tests, standards, Textbook, lecture notes, guidelines, medical history, patient demonstration Situations of tasks, educational analyzes. training journal Training journal

V. List of control questions:

1. Etiology and pathogenesis of paranephritis and Ormond’s disease.
2. Name the classification of paranephritis.
3. The main symptoms of paranephritis and Ormond’s disease.
4. The main complication of paranephritis and Ormond’s disease.
5. The main methods of diagnosis of paranephritis and Ormond’s disease.
6. The principles of conservative treatment.
7. The types of surgical treatment.
8. What is the urinary tract infection?
9. Classification of cystitis.
10. Clinic of cystitis
11. Diagnosis of cystitis
12. Treatment of cystitis.
13. Classification of prostatitis.
14. Treatment of prostatitis.
15. Inflammation of the external genitalia.
16. Erectile Dysfunction.
17. Infertility of the men.

Questions:

Progress test	
1. Tell what is the way of penetrating of mycobacterium of tuberculosis in tuberculosis of the kidney.	1.Hematogenic 2.Changes in urine passage.

2. Tell the classification of kidney tuberculosis	1.Undestructable infiltrate 2.Initial destruction (papillitis) 3.Limited destruction (cavernous 4.Total destruction, pyonephrosis
3. List the main methods of examination of tuberculosis of the organs of urogenital system.	1.Past history of the disease 2.Clinical examinations 3.Laboratory studies 4.Endovesical examination 5.Endoscopic examination
4. Endicate the main symptomatics of kidney tuberculosis	1.Backache 2. Hematuria 3.Dysuria 4. Pyuria
5. Specify the diagnostic methods in tuberculosis of the urinary system	1.Bacterioscopic 2. Bacteriological 3. Biological 4.Biopsy
6. List the methods of X-ray studies of kidney tuberculosis	1.plain urogram 2.Excretory, infusion urography 3. Retrograde, antegrade pyelography 4.Angiography 5. Radioisotope 6. X renography 7. Scanning 8. Cystography
7. Name the most pathological changes in urine	1.Strong acid reaction of urine 2.Pyuria 3.Hematuria 4. Proteinuria 5.Sow of mycobacteria
8. List the main methods of treatment	1.Conservational 2.Operational sanatorium-and-spa
9. Point the methods of treatment: a) conservational b) surgical c) sanatorium-and-spa treatment	1. Antibacterial, tuberculin therapy with hormones and vitamins organ saving : a) kidney resection, cavernotomia, cavernoektomia; b) reconstructive – Saving operation of Boari – the plastic of pelvic-ureteral segment; c) nephrectomy 1. Shefronovo 2. Glukhovska 3. Pioneerska 4. Southen Coast of Crimea, Alupka, Sonyachne

The sequence of actions	Approximate base of actions	Self-control
Complaints and anamnesis	Was the patient sick before with tuberculosis. Did the patient have the	Weakness, subfebrilitet

	contact with TB patients? Complaints Living conditions, food Is there dysuria, the effectiveness of anti-inflammatory therapy	
Objective research	Palpation of the kidney Pasternatsky's symptom Rectal examination examination of the scrotum	
Additional examination	Urinalysis Complete analysis of blood Cystoscopy Plain urography Excretory urography, retrograde ureteropiyelohraphy Cystography	Aseptic pyuria, acidic urine, proteinuria, microhematuria, detection of mycobacterium of tuberculosis. Lymphocytosis Tubercle of tuberculosis (miliary formation of crown hyperemia). Foci of calcification disorder of the discharge of contrast, deformation pelvic-calicial system, amputation of cups, the presence of caverns, enlargement of the ureters, microcyctes
Set a diagnosis	The stage of the process (X-ray classification)	
The choice of the medical tactics	Conservative therapy. The surgical intervention. Recommendations	

VI. Structural-logical scheme of the lesson content:

Specific inflammatory diseases (tuberculosis of the organs of urogenital system)

	Learning elements	
Of the first order	Of the second order	Of the third order
Etiopathogenesis	Type and nature of microbial flora. Ways of penetration of pathogenic flora into the kidney. Changes in immunobiological reactivity	Mycobacteria of tuberculosis Hematogenic
Clinical picture and diagnosis	Subjective and objective signs. Urine analysis. Instrumental studies. USE. Radiological and X-ray diagnostics	Weakness, pain, dysuria. Revealing of "sterile" leukocyturia. Chromocystoscopy. Catheterization of ureters Radiological signs. Radioisotope renography, scintigraphy, scanning
Treatment	Conservative Surgical	Specific antituberculous drugs. Dietotherapy. phytotherapy. sanatorium-and- spa treatment. Mobilization of host defenses. Elimination of stasis of urine, kidney resection or nephrectomy.

VI. Structural-logical scheme of the lesson content: Specific inflammatory diseases (tuberculosis of the organs of urogenital system)

	Learning elements	
Etiopathogenesis	Type and nature of microbial flora. Ways of penetration of pathogenic flora into the kidney. Changes in immunobiological reactivity	Mycobacteria of tuberculosis Hematogenic
Clinical picture and diagnosis	Subjective and objective signs. Urine analysis Instrumental studies. USE. Radiological and X-ray diagnostics	Weakness, pain, dysuria. Revealing of "sterile" leukocyturia. Chromocystoscopy. Catheterization of ureters. Radiological signs. Radioisotope renography, scintigraphy, scanning
Treatment	Conservative Surgical	Specific antituberculous drugs. Dietotherapy. phytotherapy. sanatorium-and- spa treatment. Mobilization of host defenses.. Elimination of stasis of urine, kidney resection or nephrectomy.
	Cyctisis	
Etiology	Educational elements Infectious Chemical Toxic Radiative Iatrogenic Nutritional Neurogenic Involutional Postoperative	
Classification	Acute Chronic	Catarrhal Hemorrhagic Fibrinous Instructing Ulcerous Gangrenous Abscess Necrotic Catarrhal Instructing Granulation Parenchymal Polipoznyy Cystic
Symptomatic	Dysuria Pain in the bladder Pyuria Typical cystoscopical picture (with prolonged acute or chronic cystitis)	
Treatment	Sparing treatment Diet Antibacterial therapy	

	Thermal procedures Spasmolytics Physiotherapy Local therapy Novocaine blockade Surgical treatment	
	Urethritis	
Classification	Front, back, Acute, chronic Specific Bacterial, nonbacterial Mixed	
Clinic and diagnostics	Dysuria, discharge from urethra. Initial pyuria. Ureteroscopy. Bacteriological study of urine, discharge from the urethra. PCR	
Treatment	Etiotropic therapy Instillation Provocative tests	Antibiotics, metranidazol, fungicide products
	Prostatitis	
Classification	Acute, bacterial, Catarrhal Follicular, parenchymal abscess Bacterial chronic Nonbacterial Prostatodinia	
Clinic	Dysuria Pain in pubis area, perineum Urinary retention in abscess High temperature (at acute prostatitis) damage of sexual functions Neurasthenia	
Diagnostics	Finger rectal examination Three glasses test of urine Laboratory secretion research of Prostate gland Bacteriological study of urine and the secret of prostate gland (PG) Test Mirs-Itamey. PCR(chain reaction)	
Treatment	Diet Antibacterial therapy Vitamins Massage of prostate Phytotherapy Physiotherapy Surgical treatment	Drainage of prostate abscess sclerosis of prostate
	Epididymitis, orchitis	
Clinic	Pain, chills, increased temperature The increase of testicular in size	
Treatment	Bed regiment Diet Antibacterial therapy Local therapy Physiotherapy. Surgical treatment	
	Balanitis, balanoposthitis	
Clinic	Head and internal layer of the anterior skin are swollen, hyperaemic,the manure excreted from the cavities	

Treatment	Local theraphy Surgical treatment	with paraphimosis
	Phlegmon of the penis	
Clinic	High temperature. The pain in the area of injury	
Treatment	Massive untebacterial theraphy	
	Gangrene of the penis and scrotum	
Clinic	High temperature, chills, ceptic condition, the pain in the penis, hiperemia and the edge flash is swallen and the scrotum is swallen too	
Treatment	Surgical treatment. Massive antibiotic therapy Disintoxication therapy	
	Erectile disfunction	
Classification	Psychogenic. Organic	
Diagnosis	Sexual anamnesis. History of the disease. Physiological test. Physical examination. Investigation of blood	
	Measurement of the night tumestsention of penis. The Dopplerultrasonography. Cavernozometriya. Cavernosography. Arteriography of penis	
Treatment	Sexsotherapy. Drug therapy. Vacuum erector. Drug injecting therapy Implantation of prosthesis of penis Arterial revascularization. Ligation of veins of the penis. Combinational therapy	
	Infertility of the men	
Classification	Secretory Excretory Combined Immunological Other forms (Unclassified)	Secretory-endocrine secretory-toxic
Diagnostics	General examination Objective examinations ofsexual organs. Laboratory research ejaculate, prostatic secretion. Hormonal studies. Henitohraphy. Biopsy of testis	
Treatment	General measures General health care. Stimulation of spermatogenesis. Surgical treatment	Give upbad habits, occupational and other factors. Vitamins, biogenic stimulators, camative or stimulates criative agent. Chorionic gonadotropin preparationsof testosterone,

		and others.

Intersubject integration

Disciplines	To Know	Will be able to
Previous courses: Normal and topographical anatomy	The structure of the urinary system and the male genital organs, topographical anatomy of the lumbar area and the pelvic	
Biochemy	Biochemical indicators of the functional ability of the kidneys	
Normal physiology	Partial indicators of the renal functions	
Propaedeutics of the internal diseases		Make the palpation and percussion of the genitourinary system, make examination of the external genitalia

VII. The most important terminological concepts and theoretical issues of the topic Contents of the lesson

Urinary Tract Infection (UTI) –is the inflammation of the urinary tract, which causes the infectious agents. Most of all it is due to the presence of bacteria. The infectious process is considered significant if in the biological research are more than 150,000 bacteria in 1 ml of urine.

Cystitis is the inflammation of the mucosa of the bladder. There are primary and secondary cystitis. Theprimarydevelops in the healthy body, and the secondarycomplicates any disease or abnormality of the genitourinary system. Just about 80% of factors of the inflammation is Gram-negative flora. In 25% cases is the microbial associations. If there is the absence of the bacterial pathogen we must exclude the tuberculosis, mycoplasma, chlamydia, and others. In the considering of the topic we

should also separate the cervical cystitis and leukoplakia the bladder which is observed in the chronic inflammation.

And separately, there is the interstitial cystitis. The diagnosis of this disease makes by the exclusion (of the other factors of dysuria), with the cystoscopy is observed the hlomerulation (submucosal hemorrhagic formation) and Hanner's ulcers (orange-pink ulcers of mucosa of the bladder). Cystoscopy is performed under the general anesthesia, as this disease is reduced the bladder capacity (if the anestetical volume is less than 600 mL it indicates about the moderate damage, but if it is less than 300 ml –it indicates the serious injury). The treatment consist ofthe hidrody latatsia and prescription of dimetilsulfacsid in the initial stages of the disease, but in the severe injuresit is the surgical treatment (augmentation cystoplastycs, suprapubicdischarge of urine).

Paracystitis is the inflammation of the connective tissues around the urinary bladder. Pericystitis is the inflammation of the peritoneum which is covering the bladder. Urethritis is the inflammation of the urethra.

Prostatitis is the syndrome which is presentedwith the symptoms that due to the presence of the inflammation or the infectious processin the prostate gland. These symptoms are: the

terminal dysuria, the functional disorders of the urination, the pain in the perineum, the frequent urination,the pain during the ejaculation.

Classification: bacterial,acute or chronic, nondacterial prostatitis.

In prostatodinia there are the symptoms of prostatitis, but in the study ofprostate secretion the leukocytes andmicrobial flora are absent.

Treatment is complex. Antibiotic therapy is ineffective in prostatodinia.

With the aim to improve the diagnosis of abacterial prostatitis is used the studies of the intracellular parasites, viruses, fungi, trichomonads by the method of polymerase chain reaction, which is exaggerates the reliability of 90%.

In the abscess of the prostateis appliedthe drainage through the rectum, in acute retention of urine –it is the suprapubic discharge of urine.

Epididymitis–is the inflammation of the epididymis.

Funikulit–is the inflammation of the membranes of the spermatic cord.

Orchitis–is the inflammation of the testicles.

Phlegmon of the penis occurs very rarely.

Gangrene of the penis and scrotum. The factors can be paraphimosis, the compression any round ringsubject. On the background of poor circulation joins the infection. The weak patients or the patients with diabetes are most affected.

Balanoposthitis–is the inflammation of the head and anterior skin of the penis

The principles of antibacterial theraphy in acute uncomplicated infections of the urinary tract performs the urinalysis and prescribes three-day course of fluoroquinolones (cypro-floksacyn 250 mg or ofloxacin 200 mg twice daily) or trimethoprim-sulfamethoxazole to 960 mg 2 times a day. The prescription of nitrofuran, amoxicillin, cephalosporins is used 10-day course.

If you have diabetes, in the age over 65 years, with a relapse of infection the antibacterial therapy is carried out for 7-10 days.

In complicated infections of the urinary tract should be examined the urine of definition of agent, both before and after the treatment. The treatment with antibioticsbroad-spectrum should be lasted 7-14 days, with severe form the drugsappointed parenterally (preferably intravenously).

In the identifying blue pus bacillus antibiotic therapy lasts at least 14 days.

With frequent re-infections in sexually active women administered postcoital prophylaxis a single dose of fluoroquinolones (200-250 mg), nitrofurantoin (50-100 mg), cephalexin (250 mg) or trimethoprim-sulfamethoxazole (240 mg). Such prevention should be held not less than 6 months and then review its appropriateness.

Screening and treatment of asymptomatic infections of the urinary tract is appropriate only during the pregnancy and after the instrumental urological examination. The criterion of necessity of treatment, is discharging not less than 100 000 microbial bodies in 1 ml of urine in 2 consecutive trials.

In pregnancy is used amoxicillin, cephalosporins, Furamagum, nitrofurantoin.

In the infection of men genitals(prostatitis, epididymitis) continue the treatment for 4-6 weeks.

Professional algorithm of examination of the patient (patient card Supervision):

Sequense of actions	Approximate base actions	Self-control
Complaints and history	When and how the symptoms developed, primary disease or relapse. Precipitating factors, previous treatment	old age, urostaz, diabetes, BPH, purulent infection, influenza and others
Objective research	Palpation of the kidneys, Pasternatsky's symptom, rectal examination, examination organs ofscrotum	
Additional studies	Urinalysis, urine bacteriological	

	examination, ultrasound and others.	
Set of diagnosis and choice ofthe tactics of treatment	Conservative therapy. Operative intervention References	

VIII. Instructions and explanations on implementation practical assignment (sample typical task)

Which method has the highest objectiveness to the diagnostics of paranephritis:
plain urograms;
retrograde pieloreterography and antegrade ureteropiyelography;
rentgenoscopy;
palpation of the kidneys;
excretory urography.
Correct answer - 5.

1) Patient P., 35 years old went to hospital on the 13th day after the planned operation on Ormond's disease, the patient had complaints of increasing body temperature and pain in the right lumbar area.
Make a plan of examination.
Set a previous diagnosis.
Prescribe treatment.
Correct answers. Retrograde urography, catheterization of the right kidney with the catheter, if this is uneffective it must be the examination of the kidney. The acute postoperative pyelonephritis.

2) Patient '35 years old had complaints of the frequent urination in small amounts of urine, imperative feeling andpain during the urination in pubis area. The patient is ill the first time ,it began 2 days ago. There is leykocyturiya in the analysis. Set a preliminary diagnosis and determinethe tactics of treatment.
Diagnosis: Acute cystitis. Diet, fluoroquinolones or nitrofurans, if it is necessary, we can use the antibiotic therapy by the bacterial urine test.

3) The man 40years old has the complaints of the dull pain in perineum, the rapid ejaculation, the decreased potency. He considers that he is ill for 5 years. Previously he was treated on the chronic prostatitis. At the rectal examination, prostate moderately enlarged, painful, and has soft consistency. After the massage – strongdischarge of secretion. Check the previous diagnosis, give the plan of examination and determine the tactics of treatment.
Diagnosis: acute exacerbations of chronic prostatitis. The examination - ultrasound, prostate secretion analysis. Treatment: antibiotic therapy, physiotherapy techniques, spa and sanatorium treatment.
Problem number 2, the third test in differential diagnositcs. for example

Symptoms	Diseases		
	cyctitis	urethritis	prostatitis
1	+	+	-
2	+	+	-
3	-	+	+
4	+	+	-

Content of the theme of the lesson

Severe forms of primary tuberculosis develop in children and adults in conditions of unfavourable effect of environment that decreases body resistance, hunger, exhausting physical labour, and poor living conditions. It occurs among the social and unsecured population.

Due to the accident at the Chernobyl nuclear power plant there is evidence that suggests that the reduction in radiation exposure of cellular and humoral immunity may be one of the factors that contribute to the development of tuberculosis in the body as a result of endogenous reactivation.

Tuberculosis of the genital organs - secondary, so-called organ tuberculosis. It develops in many years after the first clinical manifestation of tuberculosis. Urogenital tuberculosis occurs mostly in age of 20-40 years old. The main channel of spread of tuberculosis infection is hematogenous. First the kidneys are affected, and from there the infection enters through the blood vessels in renal pelvis, bladder, ureter.

In early stages of the disease general weakness, malaise, early fatigue, weight loss, loss of appetite, dull pain in the lumbar area, subfebrile body temperature are sometimes observed.

Changes of epididymis, thickening of spermatic cord are observed in physical examination of men.

Changes in blood are not specific for tuberculosis. Most often there is leukocytosis with shift of leukogram to the left and slight decreasing of eosinocytes number. Lymphopenia and hypochromic anemia may occur. The patients with tuberculosis have acid urine reaction, moderate proteinuria, pyuria, microhematuria.

Provocation test, i. e. 15-20 tuberculin units are injected subcutaneously to reveal pathologic elements, micobacteria. Leukocyturia and erythrocyturia are intensified in tuberculosis. Tuberculosis of male genital organs has chronic course, only tuberculosis of epididymis occurs in acute form. The patients have pain in the corresponding half of the scrotum, scrotal swelling and redness, increased body temperature to 39 ° C.

Chronic form of the disease begins unnoticed and takes its course asymptomatically. A little painful compression, which increases gradually, appears in epididymis. The process extends to spermaduct, and then to the egg. Epididymis unites with skin in the rise of infiltration.

The most reliable and objective evidence of tuberculosis of urinary organs are sowing of Mycobacterium tuberculosis from urine sediment. Bacterioscopic, bacteriological and biological methods of examination are used for it.

Radiological methods of examination are used to reveal morphological and functional changes in a kidney.

Single and multiple foci of calcification or shadow of sclerosed ureter can be found in a plain urogram.

Petrificates in the kidneys, strain and even destruction of the parenchyma, enlargement of cups are observed in excretory urography. Ureters can be narrowed. The bladder volume is reduced. The most informative method of diagnosis of tuberculosis of the bladder is cystoscopy. Small pale yellow or gray-yellow tubercular protuberances can be revealed at the urethral orifice of the affected kidney. Urethral orifice is inverted, deformed, it gapes.

Treatment of the patients with tuberculosis of the urinary system includes both conservative and surgical measures. The volume of treatment depends on the stage of the pathological process.

Resection of the kidney, nephrectomy, nephrostomy can be performed in surgical treatment. Application of anastomosis in different parts of the ureter, or its replacement by small intestine can be also performed. Intestinal plastic surgery is performed in case of contracted bladder.

Conservative treatment must be prolonged and continuous. Absence of changes in urine composition during 5 years after completion of treatment and positive dynamics of immunological, radiological and X-ray indicators indicates about a complete recovery.

IX. Tasks for independent work of students (examples of situational problems and their solutions).

1) The patient S. 40 years old has the disease which began with the dull pain in the sacral area. He had sweating, performance loss, low-grade fever. There is tuberculosis of cervical vertebrae in the history of disease. The patient was treated. Then he has been discharged from the dispensary ward. There is leukocytes which cover the field of view in urine, the protein 1.0, the reaction of urine is acidic.

Diagnosis? Research efforts.

Standard solutions

We can consider about the tuberculosis of the kidney. It is necessary to make the excretory urography, urine analysis (several times), cystoscopy.

2) The patient was treated in hospital because of the kidney tuberculosis. At this time the patient has the complaints of the frequent painful urination with small portions. There is the presence of nebulous urine and it was found Koch mycobacteria in urine analisys.

Diagnosis? Research efforts. Standard solutions

Tuberculosis of the kidney and the bladder. For the further diagnosis it is necessary to make endoscopic studis, excretory urohraphy and cystogram.

3) The patient K. had acute epididymitis2 years ago. At this time he has the complains of the presence of purulent hollows of scrotum. In the palpation of hills in the area of application testicular involved fistulas, the skin of scrotum is soldered to the application.

Diagnosis?

Standard solutions

Probably it can be tuberculous epididymitis. To clarify it is necessary to make some X-ray roentgenogram of the lungs, excretory urogram, plating analysis of urine, secretions of the prostate. Punctate of suspicious foci for biopsy. (Tuberculous epididymitis).

X. Control of knowledge (test theme base for variants)

Topic: "Pyonephrosis, paranephritis, cystitis, prostatitis, epididimitis, tuberculosis of urinary organs."

1. The patient complains of intensive pain in the left lumbar region, fever, body temperature increased up to 38°C. Abdomen is soft, painful in the left flank. Palpation of the kidneys is painful in theleft, tight-flexible formation is found there. Blood test: Leukocytes - 28,0x109 / l, Blood Sedimentation Rate - 63 mm/h. Analysis of urine: acid reaction, L – 3 -4 WBC/hpf. According to the US - the right kidney was normal, the contours of the left kidney are normal, in the proection of the lower pole it was found a liquid formation with heterogeneous component. What the disease we are thinking of?

a) Left side lower paranephritis
b) Tuberculosis of the left kidney.
c) left kidney tumor
d) polycystic kidney degeneration
e) acute left side purulent pyelonephritis.

2. Pyonephrosis may be:
a) closed
b) diffuse
c) local
d) interstitial
e) total

3. Patient 20 y.o., complains of frequent urination, painful calls to urinate, pain during urination is increased. Felt Ill after overcooling. These symptoms were observed three times the previous year. Body temperature is normal. Urine is cloudy, leukocytes - up to 100 WBC/hpf, protein - 0.099 g / l. What kind of disease we should think?
a) Acute cystitis.
b) Bladder Stone
c) tumor of the bladder.
d) Acute urethritis.
e) Chronic adnexitis

4. Pyonephrosis is:
a) inflammation of the kidneys
b) an inflammation of the fibrous capsule of the kidney
c) the final stage of purulent necrotic process in the renal parenchyma and it's transformation into the pus bag
d) viral kidney injury
e) Chlamydia infected kidney

5. Open pyonephrosis is:
a) pyonephrosis, where fistula is formed in the lumbar region
b) pyonephrosis, which appeared in a healthy kidney
c) pyonephrosis in which ureteral urine passage is saved and pus comes from kidneys to the bladder and is released form orifice like " paste from a tube "
d) pyonephrosis that bimanual palpation reveal
e) pyonephrosis that could determined by ultrasound

6. Types of paranephritis:
a) purulent
b) fibrotic
c) late
d) complicated
e) simple

7. Primary paranephritis is:
a) that occurs in healthy kidney
b) that occurs via hematogenous seeding due to the presence of inflammatory foci in other organs
c) that occurs due to streptococcus infection
d) that occurs due to ureteral obstruction
e) all answers are correct

8. Posterior paranephritis is characterized by:
a) "psoas sign"
b) leukocyturia
c) loss of appetite
d) bacteriuria
e) cylindruria

9. Anterior paranephritis is characterized by:
a)"psoas symptom"
b) peritonism signs

c) intestinal paresis symptoms
d) pain in the lumbar region
e) timpani percussion sounds while examination of anterior wall of the abdominal cavity

10. Patient of 20 y.o. complains of pain in the right half of scrotum, increasing temperature up to 38°C, is sick 2 days. While examining the right half of the scrotum is enlarged, hyperemic, swollen. The right testicle is enlarged, tight-elastic, painful, epididymis of not dyfferentiated. What disease do you suspect?
a) right-sided acute orchiepididymitis
b) right-sided inguinal hernia
c) right- sided funiculitis
d) the right testicle tumor
e) the right- sided spermatic cord torsion

11. The patient 30 y.o. complains of pain during urination, pain in the perineum and above the pubis, subfebrile body temperature, is ill within 10 days. When rectal examination the prostate is painful, mucosa is swollen, tight. Examination of expressed prostatic secretions tests - few lecithin bodies, leukocytes- ½ WBS/hpf. What is your diagnosis?
a) chronic prostatitis in the acute stage
b) abscessed prostatitis
c) prostate sclerosis
d) acute inflammation of the Cowper's glands
e) acute urethritis

12. The patient 33 y.o., is sick for 3 days, complains of difficulty urinating, pain in perineal and suprapubic region, increased body temperature, purulent discharge from the urethra. When digital rectal examination prostate is sharply painful, right lobe containe fluctuations, swelling of the mucosa. Ultrasound findings - prostate has hypoechoic area in the right lobe with capsule and liquid content. Urethral discharge examination – lots of leukocytes. What is your diagnosis?

a) chronic prostatitis
b) prostate abscess
c) prostate sclerosis
d) prostate cancer
e) acute inflammation of the Cowper's glands

13. Patient 30 y.o., is ill within 3 days, complains of pain during urination, urethral discharge of muco-purulent character mostly in the morning. The disease is associated with sexual intercourse. When examined it was found mucus and foamy urethra discharge. Microscopy discharge examination: lots WBCs/hpf and trichomonas. What is your diagnosis?
a) drug-induced chronic urethritis
b) prostate abscess
c) trichomonas urethritis
d) chlamydial urethritis
e) allergic urethritis

14. Tuberculosis of the urinary system is characterized by:
a) stricture in the lower third of the ureter
b) stricture in the upper third of the ureter
c) stricture in the middle third of the ureter
d) hydronephrotic pelvis dilation
e) hydrocalix

15. Multiple ureteric strictures on X-ray are typical for:
a) for tuberculosis of the urinary system
b) for chronic pyelonephritis
c) for urolithiasis
d) for pyonephrosis
e) for fibrous periureteritis

16. What does cystoscopy detect in tuberculosis of the urinary system ?
a) bladder stones
b) tumor like formation of urinary bladder
c) tuberculosis papilla and ulcers in urinary bladder
d) dilated capillaries
e) fibrin clots of the bladder mucosa

17. Urinalysis: acidic reaction, leukocyturia and absence of bacteria (aseptic urine). What do we have to suspect?
a) acute pyelonephritis
b) chronic pyelonephritis
c) tuberculosis of the genitourinary system
d) pyonephrosis
e) infected hydronephrosis

18. Avidence based diagnosis of urogenital tuberculosis is:
a) Koch's bacillus presence in urine
b) when leukocyturia is detected
c) in sterile urine
d) if cylindruria is found
e) when proteinuria is found

19. Pyonephrosis occurs when:
a) nephroptosis
b) kidney aplasia
c) tuberculosis of the urinary system
d) kidney dystopia
e) solitary renal cysts

20. What disease should be suspected in case of the long term dysuria resistant to the traditional antibacterial treatment?
a) genitourinary tuberculosis
b) drug induced cystitis
c) chronic cystitis
d) urinary bladder stone
e) chronic urethritis

XI. Methodological support:

1.Methodical recommendations for students on this topic
2.Theses of the lecture on this topic
3. Set of situational tasks
4. A set of tests on the topic of options
5. Schemes and tables

6. Devices and equipment for practical work

XII. Recommended Books:

A) Basic:

1. Urology. E.M.Shimkus,S.E.Shimkus./Simferopol, IAD CSMU, 2005.
2. Radiation oncology physics: a handbook for teachers and students international atomic energy agency Viena, E.B. Podgorsak Technical Editor.
3. Medical radiology. Radiation oncology. Editors: L. W. Brady, Philadelphia H.-P. Heilmann, Hamburg M. Molls, Munich Technical basis of radiation therapy. Springer-Verlag Berlin Heidelberg 2006.
4. Tanagho Emil A., McAninch Jack W. Smith's Geneal Urology, 17th edition, 2008.
5. Pasiechnikov S.P. Urology. Study guide for practical work for medical students, 2012.
6. Pasiechnikov, S., Saidakova, N., & Kuznetsov, V. Results of the complex systemic prophylaxis against postoperative infectious inflammatory complications in patients with benign prostatic hyperplasia. Urology. 2014.- (3), 5-11.
7. Apolikhin, O. The international epidemiological study of cross infection, urinary tract infections and genitalia male. Infekcionnyj Kontrol'. 2012.- (1), 9-10.
8. Chernenko, V., Chernenko, D., Klyus, A., & Shylo, V. Clinical efficacy of the combined therapy of patients having urolithiasis using the biologically active additions (BAD) "Prolith". Urology. 2011.- (1), 27-32.
9. Kogan, M., Naboka, Y., Ibishev, K., Gudima, I., & Naber, K. Human Urine Is Not Sterile - Shift of Paradigm. Urologia Internationalis. 2015.
10. Sing I. Prospective randomized clinical trial comparing phytotherapy with potassium citrate in management ot minimal burden (d" 8mm) nephrolithiasis. / Sing I. – Urol Fnn . – 2011. – № 3 (2). – P. 75-81.
11. Sas D. J. Incrasing incidence of kidney stones in children evaluated in the emergency department / D. J. Sas. – Pediatr. – 2010. – №157 (1). P. 132-137.
12. Frassetro L. Treatment and hrevention of kidney stones: on update / L. Frassetro. –Am Fam Physician, 2011. – №84 (11). – P. 1234-1242.
13. Modi P, Helfand BT, McVary KT.: Modifications and surgical interventions for benign prostatic hyperplasia are potential confounders of prostate-specific antigen. //Curr Urol Rep 2010;11:224–7.
14. Roehrborn C.G., McConnel J.D.: Etiology, Pathophysiology, Epidemiology, and Natural History of Benign Prostatic Hyperplasia. Chapter 38. //Campbell's Urology 8th edition, WB Sauders, 2002.

Additional

1. Clinical Radiology made ridiculously simple. Hugue Ouellette, M.D. Patrice Tetreault, Published by Med Master, Inc. P.O. Box 640028 Miami FL 33164.
2. Атлас-руководство по урологии. Под ред. А.Ф.Возианова, А.В. Люлько.- Днепропетровск, 2002.-Т.1,2,3.

METHODICAL DEVELOPMENT OF A PRACTICAL LESSON

TOPIC: STONE DISEASE, HYDRONEPHROSIS.

Place - study room, wards.

Actuality of the theme:

Urolithiasis is 30-45% of all urological diseases. The process is duplex almost in every 8-10th patient. The wide spread and frequent recurrences underline the topicality of the problem of early diagnosis, treatment and prevention of urolithiasis.

Kidneys belong to the organs, which regulate continuous state of the organism; they are responsible for excretion of end (final) products of metabolism, regulation of water-electrolyte balance, osmotic pressure of plasma, maintaining of base-acid balance, level of hormones and vitamins, as well as for erythrocytes formation. That is why in development of renal insufficiency all functions of kidneys are disturbed; this is caused by lesion of all parts of nephrons, which are followed by stable changes of homeostasis.

Renal insufficiency may be acute and chronic. Development of acute renal insufficiency is favored by pre-renal, renal and post-renal factors, while chronic renal insufficiency is a final outcome of numerous diseases, which are related to different spheres of medicine. General morbidity makes up about 190 persons by 1 million of population annually. Of them, the most capable to work age (I8-50 years old) makes up about 100 persons by 1 million of population; all this causes social significance of the disease.

Chronic diffuse glomerulonephritis, chronic pyelonephritis, renal polycystic disease, systemic lupus erythematous, nodular periarteritis (Alport's syndrome, nephronophthisis), Balkanian nephropathy, etc. are the most often diseases, which lead to development of chronic renal insufficiency.

Timely diagnostics of the basic disease and purposeful adequate treatment allows to better patients' state, to prolong their life in a number of cases. Besides, even in case of advanced chronic renal insufficiency, knowledge of uremia symptoms allow to prevent development of specific complications from the side of other organs, to timely refer patient for substitutive organotherapy (hemodialysis, kidney transplantation); this sometimes allows to prolong patients' life for decades.

Hydronephrosis (hydronephrotic transformation) is a stable progressing distention of caliceal-pelvic system with atrophy of renal parenchyma and disorder of its function, resulted from disorder of urine outflow.

Educational aims.

Purpose of the lesson.

The purpose of the lesson is to learn the issues of etiopathogenesis, symptomatology, diagnosis and treatment of urolithiasis to carry out differential diagnosis of acute surgical diseases of the abdominal cavity, providing first medical aid in emergency conditions (renal colic, anuria, hematuria) and for timely direction of patient to the doctor –urologist in necessary cases.

II. The final results of mastering the topic

In accordance with the requirements of the master's level standard, students after studying this topic should.

Know:

- To learn issues of etiopathogenesis, symptoms, diagnostics and treatment of acute and chronic renal insufficiency, ability to make differential diagnostics with other diseases, in case of necessity to be able to give primary medical aid to patients.
- Role of kidneys in maintaining homeostasis and to learn developing pathologic processes in gradual loss of basic renal functions.
- Etiology, pathogenesis, pathologic anatomy and clinical course of acute renal insufficiency.
- Morphologic-functional disorder of organism in case of lesion of renal function (by systems).
- Stages of acute renal insufficiency.
- Standard diagnostic algorithm of examination of patients with ARI.
- Up-to-day principles of ARI treatment
- Principles and methods of emergent medical aid rendering to patients with ARI.
- Causes of disease development.
- Peculiarities of clinical course of urethra-hydronephrosis, hydronephrosis.
- Causes of urolithiasis appearance.
- Classification of the urinary stones by chemical composition -Clinical manifestations of urolithiasis
- Diagnosic methods of urolithiasis.
- Principles of urolithiasis treatment

Student must be able to:

- ➢ To interpret data of clinical, laboratory and instrumental studies with the aim to define type and stage of renal insufficiency (patients, results of tests, material of lectures, textbooks).
- ➢ To make plan of conservative treatment of acute renal insufficiency and its complications (material of lectures, textbooks).
- ➢ Student must be able to:
- ➢ Interpret hydronephrosis stages, to explain disorders of renal function, depending on stage (material of lectures, text-books).
- ➢ To make scheme of examination and to comment and explain results of roentgenologic, USI, radio-nuclear, angiography methods of examination (set of images, pictures).
- ➢ To define principles of treatment tactics in case of hydronephrosis, ureteral-hydronephrosis (material of lectures, text-books).

A student must be able to:

- ✓ Make an adequate plan of investigations, state a sequence of additional means of diagnosis (lecture material, textbooks).
- ✓ Determine the level of disturbance of kidney function and complications in urolithiasis (lecture material, textbooks, patients).
- ✓ Make a plan of urolithiasis treatment (conservative, surgical, instrumental) (lecture material, textbooks).
- ✓ Have specialized (subject) competences
- ✓ Filling in case- history of urologic patient.

Practical skills appointed to the practical lesson: carry out differential diagnosis of renal colic with acute surgical diseases.

Have specialized (subject) competences

Special (professional, subject) competencies					
1.	The ability to make a provisional clinical diagnosis of an illness.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children. To know the standard examination methods and diagnostic algorithms. To know the algorithms of finding the guiding symptoms and syndromes (according to the list 1) and of making provisional and clinical diagnoses (according to the list 2). To know the methods of laboratory testing and instrumental examination (according to the list 3). To have the knowledge of patient's state evaluation.	To know how to make a physical examination of a patient; to know how to take a reasoned decision concerning finding a guiding clinical symptom or syndrome; to know how to make a provisional diagnosis (according to the list 2); to know how to prescribe a laboratory test or an instrumental examination of a patient (according to the list 3) by using standard methods.	To keep medical records of a patient (an outpatient/inpatient card, an individual child development card) basing on the practice guidelines.	To be responsible for taking reasoned decisions and actions that concern making a provisional diagnosis of an illness keeping to the ethical and legal rules.
2.	The skills of gathering information about a patient.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the methods and standard schemes of questioning and examining patients of different age groups. To know the methods of prenatal development evaluation. To know the stages and methods of psychomotor and physical development evaluation in pediatrics.	To know how to talk to a patient (including a child and his/her parents) basing on the algorithms and standards, how to examine a patient using standard methods. To know how to examine psychomotor and physical development of a child. To know how to evaluate health status of a person (including one of a child).	To make appropriate medical records concerning the health status of an adult or a child or prenatal development of a fetus.	To be responsible for a qualified information gathering that includes an interview, questioning, examination, palpation, percussion of organs and systems and timely evaluation of a person's health status, psychomotor and physical development of a child and prenatal development of a fetus. To be responsible for responding appropriately.
3.	The ability to evaluate the results of laboratory tests and instrumental examination.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of	To know how to analyze the results of laboratory tests and instrumental examinations and evaluate the information about	To prescribe reasonable laboratory tests and instrumental examinations and evaluate their results (according	To be responsible for taking decisions concerning the evaluation of the results of laboratory tests

		children of different age groups. To know the standard methods of laboratory tests and instrumental examination (according to the lest 4).	the diagnosis of a patient using these results (according to the list 4).	to the list 4).	and instrumental examinations in different age groups of children.
4.	The ability to diagnose the emergency cases.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups and standard methods of examining patients (at home, in the street, in a medical institution) under the circumstances of lacking information.	To know how to evaluate a person's status and make a diagnosis (according to the list 3) by taking a reasonable decision using the standard methods under the circumstances of lacking information.	To take a reasonable decision concerning the evaluation of a person's condition, diagnosis and taking necessary medical measures depending on the person's condition sticking to the corresponding ethic and legal rules under any circumstances. To fill in the appropriate medical records.	To be responsible for the timely and effective medical measures of emergency condition diagnosing.
7.	The ability to analyze the skialogic pattern of an X-ray image, CT and MR scans, ultrasonic and Doppler scans.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups, pathologic anatomy and physiology and principles of diagnostic imaging.	To be skilled in analyzing the diagnostic images obtained by using different radiological investigations.	To make conclusions based on analyzing and processing of the information from the X-ray images, tomographic images, MRI scans, ultrasonic scans, scintiscans.	To be responsible for qualified and timely processing and analyzing of the information from the different types of diagnostic images.

Interdisciplinary integration

№	Discipline	To know: clinical picture, etiology, pathogenesis	To be able to
1	Therapy	Chronic pleura-pneumonia	To make differential diagnostics against mentioned diseases and hydronephrosis ureteral-hydronephrosis
2	Surgery	Acute and chronic -cholecystitis -pancreatitis -lcer disease -intestinal neoplasms -neoplasms of retroperitoneal area -fibrosis of retroperitoneal area	To correctly explain all methods of examination: roentgenologic; radio-isotope; ultrasonic; angiography, etc

3	Gynecology	Acute and chronic adnexitis	.
4	Neurologic diseases	Vertebrogenic radicular syndrome	

Have specialized (subject) competences
Filling in case- history of urologic patient.
Practical skills appointed to the practical lesson: carry out differential diagnosis of renal colic with acute surgical diseases

III. Term of studies 4 acad. hours.

IV. Plan of the class:

Stages of the lesson	**Time**	**Equipment**
1.Organisation part of the visit control. Introducing students to the topic, purpose and plan of the lesson. Definition of evaluation criteria.	5	Training journal
2.Introduction: The teacher's control of the basic level of students' knowledge on this topic on the basis of their independent preparation for the lesson by the method of oral questioning or input test control (a list of questions or test samples in section V).	20	Tests, standards,
3. The main part: Studying, taking notes, students discussing and explaining by the teacher the most important terms, concepts, certain problematic issues of a topic using methodological recommendations for students. Analysis and assimilation of the graphological structure of the topic. Briefing. Performing a practical task according to options and forms (group and individual). Verification and evaluation of completed tasks.	120	Textbook, lecture notes, guidelines, medical history, patient demonstration
4. Self-student work: Performing individual situational tasks according to the options proposed by the teacher. Individual control of decision results.	20	Situations of tasks, educational analyzes. training journal
5. The final part: Final test control of knowledge and skills on the topic. Grades for each student.	15	Training journal
Homework.		
academic break	10	
180 minutes together		

V. List of control questions

1. Who constructed the first apparatus "artificial kidney"?
2. What is life span of patients on chronic hemodialysis?
3. How many people in the world on chronic hemodialysis?
4. Who was the first in the world to transplant kidney from human being to human being and when?
5. Name anatomic characteristics of human kidney.
6. What is nephron structure and function?
7. What is the role of kidney in maintaining of homeostasis?
8. What are endocrine functions of kidney?

9. Etiology and pathogenesis of hydronephrosis and uretero-hydronephrosis.
10. Basic symptoms of uretero-hydronephrosis
11. Stages of hydronephrosis
12. Role of USI and roentgenologic studies in diagnostics of hydronephrosis
13. Name additional methods of investigation and their significance
14. Complications of hydronephrosis and uretero-hydronephrosis
15. Indications to surgical intervention
16. Methods of surgical intervention depending on etiology of hydronephrosis
17. Prognosis of the disease
18. Significance of climatic and dietary factors in urinary stones forming.
19. Hyperparathyroidism as a factor of urolithiasis.
20. Role of pyelonephritis in stone forming.
21. Characteristics of urinary stones by chemical composition.
22. Main symptoms of urolithiasis.
23. Role of USE and chromocystoscopy in diagnostics of urolithiasis.
24. Means of diagnostics of X-ray negative stone.
25. "False" stones of urinary system and means of their revealing.
26. List factors and the most typical symptoms of renal colic, differential diagnose stages of aid.
27. Complications of urolithiasis.
28. Main methods of diagnostics of bladder stones.
29. Clinical nutrition of the patients with urolithiasis depending on chemical compositions of stones.
30. Therapy, aimed at the independent discharge of stones
31. Indications for surgical procedure.
32. Lithotripsy, endourological removal of stones.
33. Litholysis.

VI. Structural-logical scheme of the lesson content:

Urolithiasis.

	Learning elements	
Rate prevalence		
Aethiology	Congenital abnormalities, creating stasis of urine	Anatomical defects of the urinary tracts development, neurogenic diseases of urinary tract Congenital tubulopathies(fermentopathies) Inherited nephrosis-like and nephritis like syndromes
Pathogenetic factors	Exogenous:	Climatic and geographic factors: а)dry hot climate; б) limited drinking regimen в) iodine deficiency in the environment natureof nutrition; г) excessive amount of ergocalciferol in the body
	Endogenous general:	Disturbance of liver function and alimentary canal: а) latent and manifest hepatopathies б)hepatogenic gastritis; в)colitis and other diseases Diseases of endocrine glands:

	Endogenous local:	а) hyperparathyroidism; б) hyperthyrosis; в) hypo pituitary diseases. Diseases of bones, joints, chronical damage of internal organs etc. Chronic inflammatory process in kidneys Disturbance of urodynamics
Pathogenesis	Theory of organic matrix Colloid-crystalloid theory	
Mineral composition of stones	Urate, oxalate, phosphate, carbonate, cystine stone, cholesterol, coral calculus stone	
Symptomatology	Pain in lumbar area: Hematuria Discharge of salts and stones with urine Dyspeptic manifestations Pyuria	
Diagnostics	Data of medical history, physical examination, laboratory, radiological and radionuclide studies ultrasound examination. Chromocystoscopy Biochemical investigation of blood and urine on stone-forming substances	Plain urogram Excretory urography retrograde urethropyelography antegrade pyeloureterography Computed tomography
Copmlications	Acute and chronic pyelonephritis. Pyonephrosis. Hydronephrosis Nephrogenic hypertension Acute kidney failure (AKF), Chronic kidney failure(CKF).	

Hydronephrosis may result from narrowing of caliceal-ureteral segment, deviation of ureter, squeezing of it with blood vessels, obstacle along the route of ureter and in lower portions of urinary ways, as well as from neurogenic disturbances in the urinary system, which are followed by congestion of urine in the kidney, distention of calices and renal pelvis, microcirculation disorders and atrophy of parenchyma of organ. Hydronephrosis more often occurs in boys.

Hydronephrosis may be of two types: a) primary or congenital; b) secondary or acquired, as well as unilateral- and bilateral, aseptic and infectious, open, closed and intermitting; there are no clinical symptoms specific for hydronephrosis.

Aseptic unilateral hydronephrosis is asymptomatic for a long period of time.

Pain in the kidneys area is one of the most often symptoms. Intensity of pain depends on stage of narrowing of urinary ways. Sometimes pain in the kidney is combined with hematuria, elevation of body temperature, chill.

On physical examination in children deformation of abdomen is observed, kidney is palpated as big, movable tumor, elastically-tense, with even surface.

The most informative means of diagnostics are USI, plain and intravenous urography; they often give possibility to define cause of hydronephrosis. If kidney is not functioning, retrograde (antegrade) uretero-pyelography, CT, MRT, RRG is performed to reveal changes in it.

In presence of pyeloectasias only prolonged follow-up is carried out and only in case of disease progressing, surgical treatment is proposed.

In case of hydronephrosis of the I and II stages plastic surgeries are performed.

In case of III stage of hydronephrosis and normal functioning of contra-lateral kidney, nephrectomy is performed. Prognosis is favorable in case of timely performed surgery.

	Educational elements	
Etiology	Obstacle in PUS area Obstacle along the route of urethra. Obstacle in lower portions. Neurogenic disorders in urinary organs	Primary (congenital) (acquired)
Symptoms	First stage (pyeloectasia) Second stage(pre-hydronephrosis) Hydrocalicosis: distention of renal pelvis and calices Third stage(hydronephrosis)	Distention of renal pelvis with moderate disorder in the kidney. Hydrocalicosis – distention of calices, decrease of parenchyma thickness with expressed disorder of function, atonia of renal pelvis. Atrophy of parenchyma
Diagnostics	Past history and objective symptoms. Investigation of urine. Roentgenologic investigation.USI	Plain and excretory X-ray examination. Retrograde urethra-pyelography. Computer-aid tomography. Angiography
Treatment	Conservative Surgical	Nephrotomy. Open plastic surgeries. Endoscopic interventions (antegrade and retrograde endopyelotomy and endoureterotomy
Etiology prognosis	Name etiologic factors a) with isolated lesion of kidneys; b) with lesion of other organs	
Pathogenesis	Revea formation of uremia syndrome	
Pathologic morphology	Reveal macro- and microstructure of affected kidney	
Clinical course	Reveal, describe 4 stages of disease	
Diagnostics	Name diagnostic methods: a) clinical; b) laboratory; c) instrumental; d) X-ray-radionuclide e) USI.	
Complications	To make table of complications by organs and systems. To underline dangerous for life	
Treatment	Describe, name: a) conservative, symptomatic;	

	b) substitutional– efferent methods of detoxication c) kidney transplantation	
Etiology	Pre-renal factors Renal factors Post-renal factors	shock, collapse bleeding, dehydration burns thrombosis of renal vessels. Transfusion of incompatible blood; Crush – syndrome Poisoning with salts of heavy metals; Poisoning with vinegar essence Septic abortion Urolithiasis Ormond's disease Cervical carcinoma Ligation of ureters
Pathogenesis	Pre-renal ARI Renal ARI Post-renal ARI	Kidney hypoxia Hypotension. Dehydration. Hemolysis, blockade of canaliculi with hemoglobin Myolysis, blockade of canaliculi with myoglobin Renal edema Anaerobic infection, cortical necrosis Obstruction of ureters with calculi, squeezing with cicatrices Infravesical obstruction Ligation of ureters Renal-pelvic refluxes
Pathologic anatomy of ARI	Squeezing of glomerular arteriols and tubular capillaries Tubular destruction	
Clinical picture according to stages	Initial stage Oligo-anuria stage Diuretic stage Stage of recovery	Manifestations of etiologic factors Sudden onset Vomiting High temperature Mental confusion Pain in the lumbar area Reduce of diuresis, of urine density Rapid growth of azotemia Anemia Oliguria, anuria Reduce of urine density Proteinuria, hematuria, cylinderuria Azotemia Leucocytosis with shift of formula Low level of hemoglobin Rise of ESR Dryness of skin and mucosa Thirst, Itching,Acidosis, Hyperhydration,Hyperpotassemia. hyperphosphatemia, hyponatremia, hypocalcemia, hypochloremia Polyuria ,Hypopotassemia ,Exicosis Hypotonia ,Mental confusion, Erythrocyturia,Hypoalbuminuria,Anemia
Diagnostics	Anamnesis, X-ray examination . Scintigraphy. Ultra-sonic examination.	
Treatment	Treatment of the cardinal disease Initial stage	Fight against shock and hypotension. Cardiac glicosides. Transfusion of blood and blood substitutes. Anti-coagulants. Recharge of water and electrolyte loss Intravenously - 20-30% glucose solution Manitol Furosemide

		with dopamine. Oxygen. Blood plasma. Albumin solutions.Rheopolyglukin .Glucose with insulin

VII. The most important terminological concepts and theoretical issues of the topic. Contents of the lesson.

Acute renal insufficiency (ARI, Acute uremia) – poly-etiologic pathologic syndrome, which develops suddenly and is characterized by total severe disorder of renal function. ARI is observed in 5% of all hospitalized patients and prevails in patients admitted to surgical and obstetric units. In separate groups mortality achieves 80% (pediatric patients, those of elderly age, with poly-organic insufficiency).

In case of ARI excretion of products of protein exchange from the organism stops, azotemia and uremia develops, water-electrolytic balance, osmotic equilibrium and acid-base state is disturbed, role of kidneys in maintenance of normal arterial pressure and erythropoiesis is lost. ARI is characterized by acute disturbance of uropoiesis and urinary excretion with increased content of nitrous slags in the blood.

In child age ARI has a more severe course, than in adults because canaliculus system of a child is morphologically underdeveloped, and ARI may lead to lethal outcome or turn to chronic renal insufficiency.

Acute uremia develops in patients with severe shock of different origin, toxic lesion of kidney, in period of acute severe infection, for example in case of septic abortions as well as in transfusion of incompatible blood, traumatic crush of muscles, urologic diseases which are followed by occlusion of urinary ways.

Three basic groups of etiologic factors of ARI development are distinguished:

Prerenal

Renal

Postrenal

Prerenal factors:

Sharp and significant decrease of arterial pressure with reduce of renal blood flow in case of shock, acute blood loss.

Hemolysis and myolysis, caused by transfusion of incompatible blood group, acute hemolytic anemia, crush syndrome, spread burns.

Big loses of blood and electrolytes in severe exicosis with toxicosis against background of irrepressible vomiting, severe dyspepsia and diuretic medicinal means.

Endogenic intoxications, caused by pancreatitis, peritonitis, hepatic-renal syndrome, intestinal obstruction.

Group of renal etiologic factors is especially numerous and various:

- poisoning with substances, which have nephritic action (poisoned mushrooms, phosphorus, mercury, chloroform, quadric-chloric carbon dioxide, etc.)
- overdosage with definite medicinal means (sulfanilamides, antibiotics, etc.) or increased individual sensitivity to them with development of acute toxic-allergic lesion of kidneys.
- hemolytic-uremic syndrome and septic shock with development of acute intra-vascular coagulation.
- combining of pneumonia or pyelonephritis with infection in case of anaerobic sepsis or necrotic papillitis
- glomerulonephritis or pyelonephritis (ARI as a complication)
- rejection of kidney, which has been transplanted
- anomalies in development of kidneys
- leucosis, lympho-granulomatosis and other malignant timorous diseases
- collagen diseases with severe lesion of kidneys

Postrenal (subrenal) causes are as follows:

Congenital defects of development of urinary ways

Difficulties of urine outflow from kidneys in case of calculi of urinary ways, their squeezing with tumor, cicatrices, inflammatory infiltrate in retro-peritoneal area. Therewith, so called excretory anuria develops.

Pathogenesis

Pathogenesis of ARI (and oliguria first of all) is variable, it depends on peculiarities of causative factor and individual reaction of an organism on the most. For the development of ARI, lesion of not less than 2/3 of canaliculi is necessary. In pathologic- histologic investigation structural changes of canaliculi (swelling of epithelium, degeneration and its necrosis, sometimes tubulorrhexis, rupture of basal membrane, dilatation of lumen of canaliculi, presence of cylinders of reddish or brownish color in it), pathologic changes of interstitial tissue (marked edema, blood filling, lymphoid infiltration), as well as of capillaries (their narrowing, micro-thrombosis). In pathogenesis of ARI the main factor is ischemia and anoxia of renal tissue, which leads to death of the most sensitive epithelial cells with the further full disturbance of reabsorptive ability of renal canaliculi. Besides ischemia, in pathogenesis toxic impacts on renal parenchyma is of great significance, due to direct impact of various poisons on the latter (in exogenic poisoning as well as at the expense of accumulation of products of nitrous exchange in the organism). There exists possibility of allergenic action of a number of medicinal means on kidneys (sulfanilamides, antibiotics, etc.), products of cellular necrosis and disturbance of protein exchange.

In development of oliguria it is impossible not to take into account decrease of glomerular filtration, caused by a sharp spasm of pre-glomerular vessels, especially in case of «shock kidney».

In genesis of anuria, obturation of canaliculi lumen with cylinders is of definite significance, and in sub-renal ARI – disturbance of permeability of urinary excretion ways.

Symptoms, course

All mentioned-above develop on the background of clinical manifestations of cardinal disease (intoxication, infection, shock). Anuria or oliguria (excretion of less than 400 ml of urine daily) develop in patients.

Weakness increases, appetite disappears, nausea, vomiting appear, convulsions in muscles, tachycardia develop.

Anemia, acute psychosis develops in some patients.

In the blood level of residual nitrogen, creatinine, potassium increase rapidly. On EKG there may be signs of hyperpotassemia, arrhythmia.

After period of oliguria which may last for 5-10 days, amount of urine gradually rises to 2-4 liters and more (polyuria). Period of polyuria may last for some days and leads to dehydration with loss of sodium and potassium with signs of cardio-vascular pathology. In this case azotemia may even grow, achieving great stage.

Later gradual restoration of renal function with complete recovery occurs.

In moderate forms of renal insufficiency, except treatment of the cardinal disease, diuretic means - manitol (10% solution at a rate of 1 g/kg of patient's body mass) or furosemide (lasix) in sufficient amount are administered. Food must contain a small amount of proteins, intake of fluid must be limited due to danger of development of lung and brain edema. 40 -60 ml of 20% solution of glucose with 5-6 UN of insulin is introduced parenterally, as well as 100-200 ml of 4% solution of hydrogen carbonate.

In the more severe cases extra-corporal dialysis or peritoneal dialysis is necessary. These methods give possibility to cleanse organism from accumulation of nitrous slags and to level disturbed mineral and acid -base balance. During polyuria period it is necessary to introduce sufficient amount of fluid (intra or parenterally), and to administer potassium chloride.

Professional algorithm of examination of a patient.

Tasks	Algorithm	Notions, self- control

Complaints and anamnesis	Localization and character of pain. Time of appearing of the first signs of disease their further development. Changes in quantity of urine output	
Objec tive study	To assess patient's state. Skin state. While inspecting abdomen, to pay attention to its asymmetry, presence of protrusions. To perform palpation of abdomen in supine position, lateral position, upright one. To define Pasternatsky's symptom	Pulse, AP, respiratory rate Slightly painful, enlarged, elastic, with smooth surface kidney may be felt on palpation.
Addit ional study	State of white and red blood. Analysis of urine. Bacterial flora of urine. Urea content. Plain and intravenous urography. Retrograde uretero- pyelography. USI.	Anemia, leukocytosis. Erythrocyturia, leukocyturia, protein presence. Contours of kidneys, presence of contrast shadows in kidney projection and urinary ways to assess kidney function, disorder of patency of upper and lower urinary ways, dilatation of PCS. To assess state, thickness of parenchyma, presence of distention of initial portion of urethra. To assess state of urinary bladder, presence of distention of terminal part of urethra
Diagnosis making	To make diagnosis of main disease, its complications, presence of other urologic diseases, concomitant pathology	
Choic e of treat ment tactic s	Attentive supervision. (Repeated examination in a year) Surgical treatment	Pyeloectasia Plastic surgery of pelvic- urethral segment, uretero- caliceal anastomosis, uretero- cystoneostomy, endo-urologic means of correction (antegrade and retrograde)

Urolithiasis is 30-45% of all urological diseases. It is one of the widespread diseases and it is the second after inflammatory diseases of urogenital system. Urolithiasis is polyetiologic. It is caused by congenital anomalies, climatic conditions, deficiency of vitamins and microelements, hormonal disorders, inflammatory processes and so on.

Pain (dull pain, nagging pain or renal colic), hematuria, discharge of sand and stones are main symptoms of urolithiasis in the past history. Pyuria and dysuria are observed rarely.

In 20-25% of cases urolithiasis has active course and can simulate various diseases, including acute lesions of the abdomen (acute appendicitis, cholecystitis, pancreatitis, ileus, rupture of gastric ulcer and duodenal ulcer).

USE, chromocyctoscopy and computed tomography play an important role in differential diagnosis of acute diseases of abdominal cavity.

Ultrasound scanning of kidneys, ureters and bladder plays an important role in diagnosis of urolithiasis. We can determine acoustic characteristics of the stone with echo scanning.

X-ray examination gives important information of urolithiasis diagnosis. It should be started with plain urography. Shadows of concrements are revealed on the film except X-ray negative stones that consisted of uric acid – urate, cystine stones and protein stones.

The diagnose is made completely after introducing of radiopaque substance (excretory urography). Computed tomography gives the most accurate information about size, position and density of the stone.

Radionuclide methods are used to determine the morphological and functional disorders of the kidney. In urolithiasis, they do not provide information about stone itself, but one can determine the degree of damage of the kidney parenchyma and disturbance of urinary tract patency with their data.

There are some complications of urolithiasis:

- acute and chronic pyelonephritis (secondary, calculous);
- secondary hydronephrosis;
- fatty degeneration of kidney;
- nephrogenic hypertension;
- acute renal failure (calculous anuria),
- chronic renal failure.

In case of renal colic attack first of all pain should be eliminated. Warm bath or cold (irrigation of lumbar area with chloroethyl), antispasmodics introduction, novocaine blockade of the spermatic cord in men, and place of attachment of the round ligament of the uterus to the abdominal wall in women are used for it. Catheterization of ureter is administered in cases when mentioned methods are ineffective.

Independent discharge of stones is possible when stones smaller are than 1 cm. "Water shots", diuretic and antispasmodic drugs help it. Indications for removal of stones are the following:

- complications of urolithiasis;
- recurrent total macrohematuria;
- pains depriving the patient of efficiency;
- size of a stone is more than 1 cm. Methods of stones removal:
- remote shock- wave lithotripsy;
- endourological removal (contact lithotripsy and lithoextraction);
- open surgery;

Litholysis: (ascending, descending).

VIII. Instructions and explanations on implementation practical assignment (sample typical task)

1) Female patient T. aged 16 was hospitalized to the clinic, complaining of constant pains in the lumbar area. From anamnesis: patient suffers from pains over the last 5 years. Earlier was not examined. On objective investigation: abdomen is soft, painless, Pasternatsky's symptom is slightly positive in the right side. In USI - widened PCS of the right kidney, renal parenchymas are from 0,8 - 1,0 cm, ureter is not defined. On plain urogram – right kidney is less in sizes, on excretory urograms in the left, function of kidney is not disturbed, in the right - separate calices are noted, sizes of 7-15', in 2 hours cavity system of kidney is sharply widened.

Diagnosis, additional methods of investigation, treatment, prognosis.

Answers:

Hydronephrosis of II stage

Additional methods of investigation:

Retrograde uretero-pyelogrphy of the right, trans-femoral aortography Treatment of patient is only surgical. Prognosis is favorable in case of timely surgical intervention. Renal function after surgery improves.

2) Male patient, aged 70 years referred to reception ward, complaining of difficult urination.

On objective examination: abdomen is soft, tender over the pubis, Pasternatsky's symptom is slightly positive from both sides. On USI, widening of PCS and ureters to the intersection with iliac vessels is noted.

In urine analysis– moderate leucocytosis, in blood analysis – moderate elevation of ESR.

Name diagnosis and methods of additional investigation, methods of treatment.

Standard of answer:

Benign hyperplasia of the prostate gland, II stage. Bilateral uretero-hydronephrosis.

Additional methods of investigation:

Plain excretory urography, cystography, USI

Treatment is surgical, prostatectomy, function of kidneys after surgery improves.

3) A 37-year-old male patient was hospitalized to the clinic with pains in the right iliac area, dysuric disorders, and moderate abdominal distension. He had appendectomy two months ago. The diagnose of appendicitis was not confirmed. Microhematuria was revealed in examination of urine. The patient has correct body build, satisfactory nutrition, there is postoperative scar in the right iliac area, and there are pains in the same place on palpation.

What methods of extra examination are necessary to make a final diagnose?

The model of solving.

General analysis of blood

Plain and excretory urography with previous chromocystoscopy.

USE.

CT – if it is necessary.

4) A 40-year-old patient was brought to the clinic with pains in the left lumbar area. Pain is cramping. Macrohematuria is revealed in urine examination. The patient has a correct body build in objective study. Tenderness in the left kidney area is revealed on palpation. Pasternatsky symptom is sharp positive in the left. Cavity system in the left and initial part of the ureter is dilated in USE. Concrements in the kidney and upper third of ureter were not revealed.

What methods of extra examination are necessary to make a final diagnose?

The model of solving.

General analysis of blood.

Plain and excretory urography, excretory urography with delayed image.

IX. Tasks for independent work of students (examples of situational problems and their solutions)

1) Female patient D., has been on chronic hemodialysis for 5 years. Patient was admitted in inter-dialysis day in severe state, caused bradycardia (pulse rate - 52 bpm), arrhythmia and fall of arterial pressure to 75/40 mm Hg. What threatening complication causes patient's sate?

What factors cause myocardial dystrophy in case of uremia? Answer: hypertonia, anemia, hyperhydration.

What are absolute contraindication to transplantation of kidney? Answer: sources of infection, oncologic diseases, infravesical obstruction

2) How to characterize disorders of acid-base balance which have the following laboratory findings: $pCO2 = 30$ mm Hg., $pH = 7,25$?

Answer: metabolic acidosis, compensated by respiratory alkalosis.

What disease, which caused ARI, allows to live on hemodialysis for a long period of time?

a. Diabetes mellitus

Amyloidosis

Myelogenic disease

Chronic glomerulonephritis

Systemic lupus erythematosus
Answer: chronic glomerulonephritis, as an isolated lesion of kidneys only.

3) 35-year-old patient was hospitalized to the clinic presenting in the lumbar area, pains felt more in the right. From case history – right-sided hydronephrosis, I stage. Objectively: abdomen is soft, painless. Lower pole of the right kidney is palpable. Pasternatsky's symptom is positive in the right side. On USI a sharp distended cavity of the right kidney system is noted. In the pelvic-urethral segment calculus with the size of 1,5 cm is noted, urethra is not visualized.

Standard of answer

It is necessary to think about anomaly of development of the right kidney. Right-sided hydronephrosis, urolithiasis. Calculus of the right kidney. To confirm diagnosis it is necessary to make plain and excretory urogram, retrograde uretero-pyelography. Treatment is surgical (pyelotomy) plastics of pelvic-urethra segment.

4) Patient, aged 25 years was hospitalized to the clinic with complaints on pains in the lumbar area, periodical elevation of temperature to 38°C. Difficult urination, thin, flaccid stream. Objective study: abdomen is soft, painful over the pubis, Pasternatsky's symptom is slightly positive in the both sides. Analysis of urine – leukocyturia, blood analysis – insignificant rise of ESR. On USI: sharp dilatation of cavity system of both kidneys as well as distention of ureters up to urinary bladder.

Standard of answer

Considering task, patient has infra-vesicular obstruction. To precise diagnosis it is necessary to make excretory urography, mixed cystography, retrograde urethra-cystography, to define amount of residual urine. Treatment is surgical (depending on cause of disease).

X. Cntrol of knowledge (test theme base for variants)

Topic: "Stone disease"

1. Do the climat factors influence on urolithiasis development?
a) yes
b) no
c) only in older men
d) in women only
e) only in children

2. Urolithiasis is characterized by:
a) pain
b) proteinuria
c) cylindruria
d) increase of body temperature
e) vomiting

3. Is it possible to have a normal urinalysis in renal colic?
a) yes
b) no
c) only when right side colic
d) only at the left side colic
e) if the colic appeared for the first time in life

4. What is the most probable reason for subrenal anuria development?
a) heart failure
b) urolithiasis

c) blood loss
d) anacatharsis (severe vomiting)
e) when hyperthermia

5. Are analgesics used to relieve renal colic ?
a) yes
b) no
c) only for patients with diabetes mellitus
d) when colic appeared first time in the life
e) only at the right side renal colic

6. The main method of urolithiasis treatment is:
a) conservative treatment
b) surgical treatment
c) lithotripsy
d) laparoscopic surgery
e) treatment with diet

7. What are the complications of kidney stones :
a) renal amyloidosis
b) pyelonephritis
c) glomerulonephritis
d) nephroptosis
e) kidney ectopy

8. Urinary bladder stones more often are:
a) primary
b) secondary
c) it does not exist
d) in women only
e) in only children

9. Blood in the urine appears at the end of the day, which is the preliminary diagnosis?
a) polycystic kidney disease
b) tuberculosis of the kidney
c) tumor of the urinary system
d) urinary bladder stone
e) tumor kidney

10. Patient complains about initial hematuria, which is the preliminary diagnosis?
а) nephrolithiasis
б) tuberculosis of the kidney
в) urinary bladder tumors
г) tumors of the spermatic tubercle
д) уретри perineal urethra injury

11. Patient has an acute sharp pain in the right lumbar region, irradiating along the urethra, frequent urge to urination. Urinalysis - protein 0.033 g / l, leukocytes 2 - 3 WBC/hpf, erythrocytes - 10 - 20 WBC/hpf. What is this disease?
a) acute appendicitis
b) perforative stomach ulcer
c) renal colic right

d) acute cholecystitis
e) acute pancreatitis

12. What is the etiologic factor of urolithiasis ?
a) tubulopathy
b) hypertension
c) diabetes mellitus
d) tuberculosis
e) nephroptosis
13. One of the main symptoms of kidney stones disease is:
a) high body temperature
b) proteinuria
c) increased blood pressure
d) spasmodic pain
e) burning pain

14. Gross hematuria after acute pain in the lumbar region is typical for:
a) kidney tumor
b) urinary bladder tumors
c) urolithiasis
d) pyelonephritis
e) tumors of the urethra

15. Place of primary stone formation:
a) the renal pelvis and calyx
b) urethra
c) ureteral orifice
d) urethra
e) the upper third of the ureter

16. The main method of stone disease diagnosis is:
a) radionuclide methods
b) laboratory research metods
c) X-ray methods
d) urinalysis
e) complete blood count

17. Which of urinary stones produce an intensive shade on plain urogram?
a) oxalates
b) mixed mineral composition
c) uric acid stones
d) cystine stones
e) uric acid stones + cystine stone

18. The most effective administration for renal colic relief are:
a) antibiotics administration
b) the administration of analgesics and spasmolytics
c) vitamin C
d) діурезу forced diuresis administration
e) призначення дієти diet recomendation

19. Typical sign of urolithiasis is:

a) dysuria
b) hematuria
c) history of stone pass
d) urinalysis
e) increased blood creatinine

20. Bladder stones are more common in
a) women
b) men
c) children
d) women of reproductive age
e) boys

XI. Methodological support:

1.Methodical recommendations for students on this topic
2.Theses of the lecture on this topic
3. Set of situational tasks
4. A set of tests on the topic of options
5. Schemes and tables
6. Devices and equipment for practical work

XII. Recommended Books:

A) Basic:

1. Urology. E.M.Shimkus,S.E.Shimkus./Simferopol, IAD CSMU, 2005.
2. Radiation oncology physics: a handbook for teachers and students international atomic energy agency Viena, E.B. Podgorsak Technical Editor.
3. Medical radiology. Radiation oncology. Editors: L. W. Brady, Philadelphia H.-P. Heilmann, Hamburg M. Molls, Munich Technical basis of radiation therapy. Springer-Verlag Berlin Heidelberg 2006.
4. Tanagho Emil A., McAninch Jack W. Smith's Geneal Urology, 17th edition, 2008.
5. Pasiechnikov S.P. Urology. Study guide for practical work for medical students, 2012.
6. Pasiechnikov, S., Saidakova, N., & Kuznetsov, V. Results of the complex systemic prophylaxis against postoperative infectious inflammatory complications in patients with benign prostatic hyperplasia. Urology. 2014.- (3), 5-11.
7. Apolikhin, O. The international epidemiological study of cross infection, urinary tract infections and genitalia male. Infekcionnyj Kontrol'. 2012.- (1), 9-10.
8. Chernenko, V., Chernenko, D., Klyus, A., & Shylo, V. Clinical efficacy of the combined therapy of patients having urolithiasis using the biologically active additions (BAD) "Prolith". Urology. 2011.- (1), 27-32.
9. Kogan, M., Naboka, Y., Ibishev, K., Gudima, I., & Naber, K. Human Urine Is Not Sterile - Shift of Paradigm. Urologia Internationalis. 2015.
10. Sing I. Prospective randomized clinical trial comparing phytotherapy with potassium citrate in management ot minimal burden (d" 8mm) nephrolithiasis. / Sing I. – Urol Fnn . – 2011. – № 3 (2). – P. 75-81.
11. Sas D. J. Incrasing incidence of kidney stones in children evaluated in the emergency department / D. J. Sas. – Pediatr. – 2010. – №157 (1). P. 132-137.
12. Frassetro L. Treatment and hrevention of kidney stones: on update / L. Frassetro. –Am Fam Physician, 2011. – №84 (11). – P. 1234-1242.
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14. Roehrborn C.G., McConnel J.D.: Etiology, Pathophysiology, Epidemiology, and Natural History of Benign Prostatic Hyperplasia. Chapter 38. //Campbell's Urology 8th edition, WB Sauders, 2002.

Additional

1. Clinical Radiology made ridiculously simple. Hugue Ouellette, M.D. Patrice Tetreault, Published by Med Master, Inc. P.O. Box 640028 Miami FL 33164.
2. Атлас-руководство по урологии. Под ред. А.Ф.Возианова, А.В. Люлько.- Днепропетровск, 2002.-Т.1,2,3.

METHODICAL DEVELOPMENT OF A PRACTICAL LESSON

TOPIC: TRAUMATIC INJURIES OF UROGENITAL SYSTEM

Place - study room, wards.

Actuality of the theme:

The damage of the urinary tract are common, sometimes it is accompanied by injuries of other internal organs. Recognition of the disease in time helps the doctor of any specialty to give qualifying aid and help to avoid some mistakes in determining the treatment strategy.

Educational aims.

Study the principles of diagnostic and treatment strategy in the damage of kidneys, bladder and urethra.

II. The final results of mastering the topic

In accordance with the requirements of the master's level standard, students after studying this topic should

Know:

- classification of the kidney damage;
- clinical symptomatology damage of the kidneys and the diagnostic methods;
- indications for conservative and surgical treatment of damaged kidneys;
- classification of the damage of the bladder;
- symptoms and diagnostic methods out-and intra-peritoneal rupture of the bladder;
- pathogenesis of damage of the urethra;
- clinic and diagnostics of urethra rupture;
- principles of operative treatment of urethra ruptures.

Student must be able to:

- ✓ Palpate and percuss the kidneys and the bladder (patients);
- ✓ make retrograde cystography and uretrography (dummy);
- ✓ interpret radiographs of the patients with the injuries of the urinary system (a set of roentgenogram).

Have specialized (subject) competences

Practical skills are reserved on practical lessons

Interpretation of the results:

a) plain and excretory urography,

b) Isotope renography

c) ultrasound sonography (set of images)

Special (professional, subject) competencies					
1.	The ability to	To have a specialized	To know how to	To keep medical	To be responsible

	make a provisional clinical diagnosis of an illness.	knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children. To know the standard examination methods and diagnostic algorithms. To know the algorithms of finding the guiding symptoms and syndromes (according to the list 1) and of making provisional and clinical diagnoses (according to the list 2). To know the methods of laboratory testing and instrumental examination (according to the list 3). To have the knowledge of patient's state evaluation.	make a physical examination of a patient; to know how to take a reasoned decision concerning finding a guiding clinical symptom or syndrome; to know how to make a provisional diagnosis (according to the list 2); to know how to prescribe a laboratory test or an instrumental examination of a patient (according to the list 3) by using standard methods.	records of a patient (an outpatient/inpatient card, an individual child development card) basing on the practice guidelines.	for taking reasoned decisions and actions that concern making a provisional diagnosis of an illness keeping to the ethical and legal rules.
2.	The skills of gathering information about a patient.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the methods and standard schemes of questioning and examining patients of different age groups. To know the methods of prenatal development evaluation. To know the stages and methods of psychomotor and physical development evaluation in pediatrics.	To know how to talk to a patient (including a child and his/her parents) basing on the algorithms and standards, how to examine a patient using standard methods. To know how to examine psychomotor and physical development of a child. To know how to evaluate health status of a person (including one of a child).	To make appropriate medical records concerning the health status of an adult or a child or prenatal development of a fetus.	To be responsible for a qualified information gathering that includes an interview, questioning, examination, palpation, percussion of organs and systems and timely evaluation of a person's health status, psychomotor and physical development of a child and prenatal development of a fetus. To be responsible for responding appropriately.
3.	The ability to evaluate the results of laboratory tests and instrumental examination.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know	To know how to analyze the results of laboratory tests and instrumental examinations and evaluate the information about the diagnosis of a patient using these	To prescribe reasonable laboratory tests and instrumental examinations and evaluate their results (according to the list 4).	To be responsible for taking decisions concerning the evaluation of the results of laboratory tests and instrumental examinations in

		the standard methods of laboratory tests and instrumental examination (according to the lest 4).	results (according to the list 4).		different age groups of children.
4.	The ability to diagnose the emergency cases.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups and standard methods of examining patients (at home, in the street, in a medical institution) under the circumstances of lacking information.	To know how to evaluate a person's status and make a diagnosis (according to the list 3) by taking a reasonable decision using the standard methods under the circumstances of lacking information.	To take a reasonable decision concerning the evaluation of a person's condition, diagnosis and taking necessary medical measures depending on the person's condition sticking to the corresponding ethic and legal rules under any circumstances. To fill in the appropriate medical records.	To be responsible for the timely and effective medical measures of emergency condition diagnosing.
7.	The ability to analyze the skialogic pattern of an X-ray image, CT and MR scans, ultrasonic and Doppler scans.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups, pathologic anatomy and physiology and principles of diagnostic imaging.	To be skilled in analyzing the diagnostic images obtained by using different radiological investigations.	To make conclusions based on analyzing and processing of the information from the X-ray images, tomographic images, MRI scans, ultrasonic scans, scintiscans.	To be responsible for qualified and timely processing and analyzing of the information from the different types of diagnostic images.

III. Term of studies 4 acad. hours.

IV. Plan of the class:

Stages of the lesson	**Time**	**Equipment**
1.Organisation part of the visit control. Introducing students to the topic, purpose and plan of the lesson. Definition of evaluation criteria.	5	Training journal
2.Introduction: The teacher's control of the basic level of students' knowledge on this topic on the basis of their independent preparation for the lesson by the method of oral questioning or input test control (a list of questions or test samples in section V).	20	Tests, standards,
3. The main part: Studying, taking notes, students discussing and explaining by the teacher the most important terms, concepts, certain problematic issues of a topic using methodological recommendations for students. Analysis and assimilation of the graphological structure of the topic. Briefing. Performing	120	Textbook, lecture notes, guidelines, medical history, patient demonstration

a practical task according to options and forms (group and individual). Verification and evaluation of completed tasks. 4. Self-student work: Performing individual situational tasks according to the options proposed by the teacher. Individual control of decision results. 5. The final part: Final test control of knowledge and skills on the topic. Grades for each student. Homework. academic break 180 minutes together	 20 15 10	Situations of tasks, educational analyzes. training journal Training journal

V. List of control questions:

1. Classification of the kidney damage
2. Clinic of intra-abdominal rupture of the bladder.
3. Treatment of the slaughter of the kidney
4. Methods of surgical treatment of the rupture of urethra
5. Classification of the urethra injuries.

VI. Structural-logical scheme of the lesson content:

Traumatic injuries of the urogenital system.

Educational elements		
	Damage of the kidneys	
Classification of closed injuries	The rupture of fatty cells and fibrous capsule, subcap- sular rupture of parenchyma, the capsule and parenchyma rupture without and with penetration into a bowl, crushing the kidney, kidney isolation, slaughter of the kidney	
Symptomatics of closed injuries	The pain, the swelling in the lumbar area, hematuria, the spinal curvature in the direction of the injury	
Diagnostics of closed damage	The role of chromocystoscopy, plain urography, excretory urography	The absence or blurring of circuit of kidneys and lumbar muscles, weak or late filling contrast pelvic- caliceal system, out of the kidney leakage of the contrast, the absence of the functions of the kidney
The main features of open damage	Hematuria, the role of indigocarmin tests for the kidney injury, leakage of urine into the wound	
Treatment	Indications for the conservative treatment. Methods of the conservative therapy	Bed regimen Analgesics. Application of the hemostatic products. Antibacterial

	Indications for the urgent surgical intervention in closed damages. Indications for the urgent surgical intervention in the open injures. Organ keeping operations Indications for nephrectomya	medicine Combined the kidney damage with the damage of intraabdominal organs, internal bleeding, that is accompanied by anemia and lower blood pressure, increase of around-renal hematoma(urohematomy), intensive hematuria. All types of open damage, it is the signs of acute inflammation in the damaged kidney or paranephria. Suturing of the kidneys, the kidney resection. Crushing the kidneys, tear off the kidney of the vascular pedicle, numerous wide damage
	Damage of the bladder	
Classification	Closed injures Open injures, interaabdominal ruptures retroperitoneal ruptures	Correlation between the pelvic bones fractures and out-abdominal ruptures. Abruption of the bladder from urethra.
Simptomatics of the retroperitoneal ruptures	Pain above the pubis. Disorder of urination. Hematuria. Palpation of the abdomen, the presence of urinary infiltration, the primary localization of pain in the abdomen	Irradiation of the pain in the perineum, the occurrence or increased pain when trying to urinate Spurious urge to urination, accompanied by tenesmus, the discharge of a small amount of urine, could be the retention of urine The tension of front abdominal wall above the pubis
Characteristic features of the intraabdominal ruptures	Diffuse nature of pain around the stomach, the tension of anterioventral abdominal wall, the dullness of percussion sound without clear lines	
Leakage of urine from the wound in open injuries.	Open injuries	
Diagnostics.	Catheterization of urinary bladder. Opportunities and dangers of cystoscopy Retrograde cystography is the main method of diagnostics	Lack of urine in catheterization, the discharge of small amounts of urine, that is coloured with blood, discharge of large amounts of liquids in excess of the capacity of the bladder. Radiography in two projections. Defferred cystography, leaking the

		contrast out of the bladder
Treatment	Conservative treatment of nonpenetrating damage	Antibacterial therapy, hemostatic therapy, catheterization of the bladder
	Operational treatment.	Restoring the integrity of the bladder, the discharge of urine, urinary drainage of urinary leakage, the drainage of abdominal cavity
	Damage of the urethra	
Mechanism of closed damage	The damage of tuberous part it is due to the influence of external forces on the urethra, the damage of membranous and prostate part of pelvic bones fructures, instrumental damage	
Classification by the degree of damage	Partial(nonperetrating) gap, the full (nonperetrating) gap uretrorapia	Urinary leakage, necrosis of tissue in the area of hematoma, the origin of phlegmon, the development of urosepsis
Symptomatics	Complete retention of urine, partial retention of urine, the presence of urohaematoma uretrorrahia, the total swelling in palpation of the prostate	The appearance of uretrorrahia in pressing on the area of prostate
Diagnostics	Uretroghraphy is the main method of diagnostics	
Treatment of nonpenetrating damage	Bed rest, cold on the perineum, antibacterial therapy, catheterization of the bladder, epicystostomy	
Treatment of penetrating damage	cutting and drainage of hematoma, primary urethra - urethral anastomosis, epicystostomy	

VII. The most important terminological concepts and theoretical issues of the topic

The context of the lesson

The most common causes of the kidney injury are the traffic accidents, falls and sport injuries.

There are characteristic signs of the kidney injury: the pain in the lumbar region (broken rib, subcutaneous, retroperitoneal hematoma), gross hematuria, microhematuria and systolic blood pressure below 90 mm.

The rupture of the bladder could be intraperitoneal, out-peritoneal and combined. In the cases of the rupture of the bladder should be performed cystography, check Zeldovich's symptom. After the performance of cystography follows uretrography.

The most common testicle injuries are closed testicular trauma and described testicular trauma in the pelvic position of the fetus. The injury of the testicles is usually a solitary damage, but sometimes the cause is penetrating object. In the most cases the closed injury leads to the rupture of the testicle. If the testis can be palpated and the swelling is small, the testicle, paradidymis and the structures of spermatic cord must be carefully examined. If there is any defect that can be palpated in the protein shell it is an indication for the surgical treatment.

Medical management of testicular trauma is next. First of all it is necessary to determine the cause of damage. If there is ultrasound it must be done the examination of the testicles that helps to identify the rupture of protein coat. It must be carefully examined the data\results of clinical examination. If there is a doubt about the seriousness of the injury, the surgical intervention contributes to faster patient recovery than the tactics of waiting.

VIII. Instructions and explanations on implementation practical assignment (sample typical task)

1) The patient, 43 years old, entered to the clinic with the pain in the left part of the lumbar area, which emerged after the falling from the height of 2 m. After the injury the presence of double macrohematuria was noticed during the urination. The condition is moderate. Blood pressure and pulse is in rate. There weren't pathological changes in the chest and abdominal cavity. There is small painful swelling in the left lumbar area. Give the preliminary diagnosis and explain it.

2) The patient, 25 years old, was brought to the clinic with pain in the right lumbar area, with gross hematuria with clots. The patient was hit with the hard object in the right lumbar region an hour ago. The situation is forced: there is expressed scoliosis in a sick way. The painful swelling is determined in the area of right hypochondrium. Pulse is 120 bpm. in 1 min. SC 85/50 mmHg There isn't the signs of peritonitis. There is not defined the free fluid in the abdominal cavity. The left kidney of normal size on excretory urograms, pelvic-calicial system is not changed. The passage of radiopaque substance along the ureters is not disturbed. The right contrast fluid in the projection kidney and urinary tract is not determined, chromocystocopy: with an eye of right ureteral there is a blood stream, indigocarmine is not determined within 12 min of observation. Urine on the left is colored with indigocarmine, appeared on the 7-th minute. Your diagnosis? Therapeutic approach? Is there any sense in the performance of a secondary or additional research?

3) The patient, 40 years old, clinically and radiologically diagnosed retroperitoneal rupture of the bladder. Your treatment approach?

- Approximate map for independent work with literature
- study the classification of renal damage
- clinical symptomatology and diagnostics of kidney damage
- indications for conservative and operative treatment of kidney damage
- classification of the bladder injuries
- clinic and diagnostics injuries of the bladder
- treating injuries of the bladder
- pathogenesis of urethra injury
- diagnostics of urethral rupture
- treating injuries of the urethra.

IX. Tasks for independent work of students (examples of situational problems and their solutions)

Professional algorithm of examination of the patients.

Tasks	Oriental basis of actions	Self-control . Comments
Complaints	The nature and localization of pain The presence of hematuria, uretroraphy The nature of urination	

	Complaints that inherent the damage of other organs	
Anamnesis	Time of injury, its nature What was the feelings after the injury What kind of first aid received and by whom it was provided. Did the patient suffered earlier in the dissease of genitourinary system What is the time of occurrence of hematuria, uretrorrahy When was the first call of urination explain and how it was	
Objective research of the patient	The general condition of the patient color of skin, mucous membranes, the presence of abrasions, scratches bleeding, hematomas. The presence of deformities, crepitation Condition of bones Palpation of the abdomen, suprapubic area, urethra, perineum, external genitals. Macroscopic examination of urine	Shock, collapse, signs of alcohol poisoning Psoas symptom, the position of "frog symptom of "Vanka-" vstanka ", scoliosis The presence of symptoms of peritoneal irritation, free fluid
Laboratory research	General analysis of blood. General analysis of urine	Anemia. Hematuria
Additional examinations	Ultra sound X-ray examination. Instrumental examination	
Diagnosis and basis of medical strategy	Conservative tactics. Operation	

X. Control of knowledge (test theme base for variants)
Topic : "Injuries of the genitourinary system"

1. Injury of the kidney is characterized by:
a) heavy breathing
b) symptoms of peritoneal irritation
c) pain in the lumbar region
d) hyperthermia
e) nausea and vomiting

2. Is plain urography indicated in case of kidney injuries
a) yes
b) no
c) only in children
d) in the right kidney injury
e) in the left kidney injury

3. The sign of open renal injury is:
a) hematuria
b) localization of wounds in the lumbar region
c) urohematoma
d) urine leak from the wound
e) decrease of blood pressure

4. Open the urethra lesions more often:
a) compatible
b) isolated
c) open lesions of the urethra does not happen
d) iatrogenic only
e) closed only

5. Fracture of pelvic bones is typical at:
a) extraperitoneal bladder rupture
b) intraperitoneal rupture of the bladder
c) damages of intraperitoneal organs
d) injuries of the scrotal organs
e) damages the liver

6. Intraperitoneal rupture of urinary bladder is characterized by:
a) terminal hematuria
b) inability to urinate
c) signs of urinoma/urohematoma
d) initial hematuria
e) uretrorragia

7. To provide retrograde cystography in case of bladder rupture is used:
a) Liquid triatomic iodine containing radiographic contrast medium
b) oxygen
c) barium sulfate
d) Liquid monoatomic radiographic contrast medium
e) Liquid diatomic radiographic contrast medium

8. If you suspect a rupture of the bladder it is necessary to:
a) outpatient observation
b) outpatient treatment in polyclinic
c) Planned hospitalization in urological department
d) immediate hospitalization in urological department
e) conservative treatment administration

9. The most typical symptom of urethral injury is:
a) total gross hematuria
b) uretrorragia
c) the presence of blood clots in the urine
d) pain in suprapubic area
d) terminal hematuria

10. Is cystoscopy indicated if urethra rupture is suspected ?
a) yes
b) no
c) if no ultrasound diagnostic apparatus available
d) women only
e) men only

11. Patient has initial hematuria. Your preliminary diagnosis:
a) nephrolithiasis
b) tuberculosis of the kidney

c) tumor of urinary bladder
d) prostate cancer
e) fixed urethra injury.

12. The sign of renal injury is:
a) pain during urination
b) hematuria
c) pneumaturia
d) leukocyturia
e) bacteriuria

13. The sign of renal injury is:
a) initial hematuria
b) terminal hematuria
c) the total hematuria
d) leukocyturia
e) cylindruria

14. What method is indicated for renal injury diagnosis?
a) intra venous urography
b) Radionuclide renography
c) renal scan
d) urine sediment microscopy
e) bacterial urine test

15. The most frequent urethra damage is:
a) open
b) closed
c) iatrogenic
d) there is no damage
e) combined

16. Iatrogenic ureteral injuries are more common in case of:
a) surgical operations
b) urological operations
c) gynecological operations
d) obstetric manipulation
e) it does not happen

17. Is it possible spontaneous urination in intraperitoneal bladder rupture?
a) yes
b) no
c) occasionally
d) only after diuretics administration
e) only after alfa adrenoblockers administration

18. What should we do in case of extraperitoneal urinary bladder rupture?
a) introduce a permanent urethral catheter
b) administer antibiotics
c) to provide surgery
d) administer hemostatic agents
e) administert analgesics

19. The main method of urethral rupture diagnosis is:
a) IV urography
b) cystography
c) urethrocystography
d) voiding cystography
e) urethroscopy

XI. Methodological support:

1.Methodical recommendations for students on this topic
2.Theses of the lecture on this topic
3. Set of situational tasks
4. A set of tests on the topic of options
5. Schemes and tables
6. Devices and equipment for practical work

XII. Recommended Books:

A) Basic:

1. Urology. E.M.Shimkus,S.E.Shimkus./Simferopol, IAD CSMU, 2005.
2. Medical radiology. Radiation oncology. Editors: L. W. Brady, Philadelphia H.-P. Heilmann, Hamburg M. Molls, Munich Technical basis of radiation therapy. Springer-Verlag Berlin Heidelberg 2006.
3. Tanagho Emil A., McAninch Jack W. Smith's Geneal Urology, 17th edition, 2008.
4. Pasiechnikov S.P. Urology. Study guide for practical work for medical students, 2012.
5. Pasiechnikov, S., Saidakova, N., & Kuznetsov, V. Results of the complex systemic prophylaxis against postoperative infectious inflammatory complications in patients with benign prostatic hyperplasia. Urology. 2014.- (3), 5-11.
6. Apolikhin, O. The international epidemiological study of cross infection, urinary tract infections and genitalia male. Infekcionnyj Kontrol'. 2012.- (1), 9-10.
7. Chernenko, V., Chernenko, D., Klyus, A., & Shylo, V. Clinical efficacy of the combined therapy of patients having urolithiasis using the biologically active additions (BAD) "Prolith". Urology. 2011.- (1), 27-32.
8. Kogan, M., Naboka, Y., Ibishev, K., Gudima, I., & Naber, K. Human Urine Is Not Sterile - Shift of Paradigm. Urologia Internationalis. 2015.
9. Sing I. Prospective randomized clinical trial comparing phytotherapy with potassium citrate in management ot minimal burden (d" 8mm) nephrolithiasis. / Sing I. – Urol Fnn . – 2011. – № 3 (2). – P. 75-81.
10. Sas D. J. Incrasing incidence of kidney stones in children evaluated in the emergency department / D. J. Sas. – Pediatr. – 2010. – №157 (1). P. 132-137.
11. Frassetro L. Treatment and hrevention of kidney stones: on update / L. Frassetro. –Am Fam Physician, 2011. – №84 (11). – P. 1234-1242.
12. Modi P, Helfand BT, McVary KT.: Modifications and surgical interventions for benign prostatic hyperplasia are potential confounders of prostate-specific antigen. //Curr Urol Rep 2010;11:224–7.

Additional

1. Clinical Radiology made ridiculously simple. Hugue Ouellette, M.D. Patrice Tetreault, Published by Med Master, Inc. P.O. Box 640028 Miami FL 33164.
2. Атлас-руководство по урологии. Под ред. А.Ф.Возианова, А.В. Люлько.-Днепропетровск, 2002.-Т.1,2,3.

METHODICAL DEVELOPMENT OF A PRACTICAL LESSON

TOPIC: TUMORS OF URINARY AND MALE SEXUAL SYSTEM. BENIGN PROSTATIC HYPERPLASIA AND PROSTATE CANCER

Place - study room, wards.

Actuality of the theme:

Efficacy of treatment of oncologic patients directly depends on treatment methods, and on timely diagnostics of malignant tumors in the most. It is timely early diagnostics that remains the most complicated and topical issue. Increase of level of sanitary culture, which directly concerns activity of doctors of general practice is of great importance for timely diagnostics of malignant neoplasms. In recent years disease incidence with tumor processes significantly increased, this is probably linked with consequences of Chernobyl accident, worsening of ecologic situation in Ukraine. That is why there are no doubts as for early diagnostics of this group of diseases, oncologic alarm of urologists as well as of local physicians in local polyclinics. Every physician must be familiar with revealing of timorous processes in urinary system.

Tumors of male genital organs.

In the majority of cases (85-90%) tumors of male genital organs (TMGO) are malignant. By the data of WHO cancer of MGO occurs in 3-4% of all malignant neoplasms. In the world over the last years increase of incidence of TMGO is observed. Late revealing significantly makes treatment difficult and worsens prognosis. TMGO extends in Ukraine over the last years; this is linked with worsening of ecologic situation in the country, decrease of level of population's health, consequences of Chornobyl APS accident. Due to a high malignancy of TMGO role of radical surgical treatment increases; the latter is linked with chemotherapy, hormonal and radiation treatment and allows to prolong and improve patients' life.

Educational aims.

To study questions of etiopathogenesis, symptomatology, diagnostics and treatment of cancerous disease of urinary system organs, to be able to carry out differential diagnostics with other diseases, in case of necessity to be able to give the first medical care to patients.

II. The final results of mastering the topic

In accordance with the requirements of the master's level standard, students after studying this topic should

Know:

- how to identify timorous diseases of kidney and tumors of renal parenchyma and those of renal pelvis;
- renal and extra-renal symptoms of renal carcinoma;

- principal difference in diagnostics and treatment of renal parenchyma and cancer of renal pelvis;
- measures directed at early revealing of relapse of timorous processes of urinary system.
- Clinical manifestations of benign hyperplasia and prostate cancer, tumors of testes.
- Complications of benign hyperplasia and prostate cancer, tumors of testes.
- Diagnostics of benign hyperplasia and prostate cancer, tumors of testes.
- Treatment benign hyperplasia and prostate cancer, tumors of testes.

Student must be able to:

- ✓ take case history in pathology, which is being studied (patients);
- ✓ palpate and percuss renal neoplasms (patients);
- ✓ interpret data of USI investigation in oncologic-urologic diseases (set of images);
- ✓ interpret cystograms and urograms (defect of contour, filling defect, dilatation of upper urinary ways) (set of images, atlas).
- ✓ interpret clinical anatomy, physiology of organs of male genital system (material of lectures, textbooks, atlas).
- ✓ perform palpation of prostate, scrotal organs (patients).
- ✓ make scheme of investigation and explain results of additional methods of investigation in benign hyperplasia and prostate cancer, tumors of testes.
- ✓ (material of lectures, textbooks, set of pictures, samples of analysis).
- ✓ to define principles of treatment techniques in patients with tumors, depending on the stage (material of lectures, textbooks).

Have specialized (subject) competences:

Practical skills which are to be mastered at this lesson: making scheme of examination and treatment of patients with urologic pathology.

Have specialized (subject) competences

Special (professional, subject) competencies					
1.	The ability to make a provisional clinical diagnosis of an illness.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children. To know the standard examination methods and diagnostic algorithms. To know the algorithms of finding the guiding symptoms and syndromes (according to the list 1) and of making provisional and clinical diagnoses (according to the list 2). To know the methods of laboratory testing and instrumental examination (according to the list 3). To have the knowledge of patient's state	To know how to make a physical examination of a patient; to know how to take a reasoned decision concerning finding a guiding clinical symptom or syndrome; to know how to make a provisional diagnosis (according to the list 2); to know how to prescribe a laboratory test or an instrumental examination of a patient (according to the list 3) by using standard methods.	To keep medical records of a patient (an outpatient/inpatient card, an individual child development card) basing on the practice guidelines.	To be responsible for taking reasoned decisions and actions that concern making a provisional diagnosis of an illness keeping to the ethical and legal rules.

		evaluation.			
2.	The skills of gathering information about a patient.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the methods and standard schemes of questioning and examining patients of different age groups. To know the methods of prenatal development evaluation. To know the stages and methods of psychomotor and physical development evaluation in pediatrics.	To know how to talk to a patient (including a child and his/her parents) basing on the algorithms and standards, how to examine a patient using standard methods. To know how to examine psychomotor and physical development of a child. To know how to evaluate health status of a person (including one of a child).	To make appropriate medical records concerning the health status of an adult or a child or prenatal development of a fetus.	To be responsible for a qualified information gathering that includes an interview, questioning, examination, palpation, percussion of organs and systems and timely evaluation of a person's health status, psychomotor and physical development of a child and prenatal development of a fetus. To be responsible for responding appropriately.
3.	The ability to evaluate the results of laboratory tests and instrumental examination.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the standard methods of laboratory tests and instrumental examination (according to the lest 4).	To know how to analyze the results of laboratory tests and instrumental examinations and evaluate the information about the diagnosis of a patient using these results (according to the list 4).	To prescribe reasonable laboratory tests and instrumental examinations and evaluate their results (according to the list 4).	To be responsible for taking decisions concerning the evaluation of the results of laboratory tests and instrumental examinations in different age groups of children.
4.	The ability to diagnose the emergency cases.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups and standard methods of examining patients (at home, in the street, in a medical institution) under the circumstances of lacking information.	To know how to evaluate a person's status and make a diagnosis (according to the list 3) by taking a reasonable decision using the standard methods under the circumstances of lacking information.	To take a reasonable decision concerning the evaluation of a person's condition, diagnosis and taking necessary medical measures depending on the person's condition sticking to the corresponding ethic and legal rules under any circumstances. To fill in the appropriate medical records.	To be responsible for the timely and effective medical measures of emergency condition diagnosing.
7.	The ability to analyze the skialogic pattern of an X-ray	To have a specialized knowledge of humans, their organs and systems,	To be skilled in analyzing the diagnostic images obtained by using	To make conclusions based on analyzing and processing of the	To be responsible for qualified and timely processing and analyzing of

	image, CT and MR scans, ultrasonic and Doppler scans.	anatomical and physiological peculiarities of children of different age groups, pathologic anatomy and physiology and principles of diagnostic imaging.	different radiological investigations.	information from the X-ray images, tomographic images, MRI scans, ultrasonic scans, scintiscans.	the information from the different types of diagnostic images.

III. Term of studies 4 acad. hours.

IV. Plan of the class:

Stages of the lesson	**Time**	**Equipment**
1.Organisation part of the visit control. Introducing students to the topic, purpose and plan of the lesson. Definition of evaluation criteria.	5	Training journal
2.Introduction: The teacher's control of the basic level of students' knowledge on this topic on the basis of their independent preparation for the lesson by the method of oral questioning or input test control (a list of questions or test samples in section V).	20	Tests, standards,
3. The main part: Studying, taking notes, students discussing and explaining by the teacher the most important terms, concepts, certain problematic issues of a topic using methodological recommendations for students. Analysis and assimilation of the graphological structure of the topic. Briefing. Performing a practical task according to options and forms (group and individual). Verification and evaluation of completed tasks.	120	Textbook, lecture notes, guidelines, medical history, patient demonstration
4. Self-student work: Performing individual situational tasks according to the options proposed by the teacher. Individual control of decision results.	20	Situations of tasks, educational analyzes. training journal
5. The final part: Final test control of knowledge and skills on the topic. Grades for each student.	15	Training journal
Homework.		
academic break	10	
180 minutes together		

V. List of control questions

1. Classification of renal tumors.
2. Metastasizing of parenchymatous renal tumors.
3. Renal and extra-renal symptoms of renal tumors.
4. Diagnostics of renal tumors.
5. Differential diagnostics of renal tumors.
6. Treatment of renal tumors.

7. Prognosis of adenocarcinoma.
8. Symptom complex and diagnostics of tumors of renal pelvis.
9. Classification of tumors of urinary bladder.
10. Symptom complex and diagnostics of tumors of urinary bladder.
11. Treatment and prognosis in case of tumors of urinary bladder.
12. What are the main aetiological factors of male genital tumours (MGT) development?
13. What is morbidity of MGT?
14. Could you state histological classification of MGT?
15. What are the most frequent histological cancer types of MG?
16. What are main patient's complaints in prostate tumours, testicular cancer, and hyperplasia of prostate?
17. What methods of examination are used for diagnosing of MGT?
18. What surgical procedures are used for treatment of the patients with MGT?
19. What preparations are used for treatment of the patients with prostate cancer, hyperplasia of prostate?

VI. Structural-logical scheme of the lesson content:

	Educational elements	
Classification of renal tumors	Tumors of parenchyma Tumors of renal pelvis	Benign Malignant: Secondary (metastatic), benign, malignant, regional metastases
Metastasizing and spread	Spread of parenchymal tumors Implantation spread of renal pelvis tumor	Into the lungs, liver, bone metastases, metastases Spread into interior cava
General (extra-renal) symptoms	Worsening of general state, elevation of temperature, anemia, polycythemia elevation of AT, varicocele	
Renal (local) symptoms	Hematuria Pain in the lumbar area Defining of neoplasm Atypical cells in urine	Painless, total, appears and disappears suddenly, character of blood clots, succession of development of hematuria and acute pain in the lumbar area
X-ray and radio-diagnostics	Significance of plain film excretory urography danger of retrograde pyelography Renal angiography Venocavagraphy	Deformation and replacement of renal calices or renal pelvis, amputation" of calices, filling defect, replacement of urethra. Symptom of"lake, pool"
USI	US – signs of renal cell carcinoma	
Surgical treatment	Nephrectomy Nephro-ureterotomy with urinary bladder resection. Resection of kidney Enucleation of kidney	
Conservative treatment	Target therapy Immunotherapy Radiation therapy Chemotherapy	

Classification of urinary bladder tumors	Epithelia	Typical papillary fibro epithelioma Atypical papillary fibro epithelioma, papillary cancer. Solid cancer
Metastasizing	Lesion of alremot region lymphatic nodes, e metastases	
Symptomatology	Hematuria Disuria. Pain in the urinary bladder area	Total Terminal Tamponade of urinary bladder with blood clots
Diagnostics	Bimanual palpation Cytologic investigation of urine sedimentation Cystoscopy Endovesical biopsy X-ray investigation USI	Cystography, sedimenta cystography, polycystography Pricystography, excretory urography, pelvi phlebography, pelvi arteriography Endo-vesicular electrocoagulation Hemi-resection of urinary bladder with transplantation of urethra. Transurethral electro- resection, trans-vesical electro-resection, resection of urinary bladder, cystectomy. Radiation therapy .Chemotherapy. Immunotherapy (BCG).

Structural and logical scheme of the theme content

	Hyperplasia of prostate	
Etiopathogenesis	Hormonal rearrangement of male organism Increasing of transitory zone of the prostate Infravesical obstruction	
Classification	I-stage of compensation II- stage of subcompensation III- stage of decompensation	
Symptoms	Pollakiuria Nycturia Stranguria Enuresis Acute urinary retention Chronic urinary retention Paradoxical urinary retention	
Diagnosing	Prostatic specific antigen(PSA), palpation, ultrasound examination X-ray examination,CT . MRT	
Treatment	Conservative Surgical	Alpha-adrenergic blocking agent Blocking agent of 5-α-reductase Transurethral

		resection of the prostate (TURP) Prostatectomy
	Testicular cancer	
Classification	Germinogeneous tumours Tumours of gonadal stroma. Other tumours	Seminoma Tumours of vitelline sac Embryonic carcinoma Chorionepithelioma. Teratoma. Mixed tumours. Leydig cells tumours. Sertoli cell tumours. Gonadoblastomas. Mixed tumours Epidermoid cyst. Adenomatous tumours. Adenocarcinoma of rete testis. Carcinoid.
Symptoms	Painless increasing of consolidation, tuberosity of the surface	
Diagnosing	PSA, palpation, ultrasound examination, CT, MRT, X-ray examination, biopsy	
Treatment	Orchofuniculectomy, M. Chevassu operation Radiation therapy. Chemotherapy.	
	Prostate cancer.	
Etiopathogenesis	carcinogenic substances in the organism; environmental aspect; disorder of endocrine regulation.	
Classification	Epithelial Nonepithelial Mixed	adenocarcinoma scirrhus, solid carcinoma, epidermoid cancer. Leukomyoma leukosarcoma, rhabdomyosarcoma, hemangioma, hemangiosarcoma, hemangiopericytoma, neurofibroma etc. Cystoadenoleiomyofibroma . phylloid cystisarcom
Symptoms	- dysuria; -hematuria; Disorder of defecation; pains; renal insufficiency	
Diagnosing	Palpation. digital rectal investigation. X-ray examination. Ultrasound examination. Biopsy of prostate. PSA, CT, MRT, osteoscintigraphy	CT, plain urography, urethrocystography, transabdominal and transrectal USE
Treatment	Surgical Conservative	Radical prostatectomy cystostomy, TURP hormonal therapy, radiation therapy. Systemic chemotherapy

VII. The most important terminological concepts and theoretical issues of the topic The context of the lesson

Renal cell carcinoma makes up 3% of general number of timorous diseases in adults and 85% of all primary-malignant renal tumors. In the genesis of renal carcinoma role of hormonal disturbances, impact of ionizing radiation and chemical substances, congenital defects of development is proved. Wilms' tumor develops from embrional primordiums due to disorders of development of primary and secondary kidney.

Macro- and micro-hematuria, pain in the abdomen or in the lumbar area and volumetric formation, palpable in the abdominal area are the most often signs. These signs make up classic triade. In metastatic lesion of organs, complaints connected with involvement of

lungs or osseous system into pathologic process may be present. Renal cell carcinoma (RCC) may be defined by erythrocytosis, hyperpotassemia, hypertension, hyperthermia, disturbances of liver function, varicocele, elevated ESR, anemia. Diagnostic methods are USI, investigations of vessels, CT and MRT. Excretory urography, retrograde pyelography, isotopic scanning of kidneys has less sensitivity, especially in not large tumors. Renal adenocarcinoma may metastasize into regional lymphatic glands, lungs, bones, liver, brain. Nephrectomy is a single radical means of treatment of patients with RCC. Nephrectomy includes removal of the kidney within the limits of Gerout's fascia. Adrenal glands should be removed in case of lesion of the upper pole of kidney. In case of timorous thrombus in the inferior vena cava (IVC), prognosis significantly worsens, due to the fact, that surgical treatment becomes nonradical (palliative). That is why it is necessary to remove thrombus from the vein, therewith special attention should be paid to prevention of inter-operation migration of tumor fragment.

In patients with RCC metastases nephrectomy is palliative treatment and is applied in case of severe complications, which are connected with local manifestations. In patients with RCC and solitary operable metastases, tactics of removal of primary and metastatic nodes is justified. According to modern concepts, treatment of metastatic RCC requires removal of primary tumor. Prognosis in case of RCC is doubtful. 5-year survival rate makes up 17-44%, and 10-year – 11-29%. Papillary cancer of the renal pelvis is manifested by hematuria, pains in the lumbar area, sufficiently rare – by increase of kidney (secondary hydronephrosis). Diagnostics is based on the data of excretory urography (EU) and retrograde uretero-pyelography, uretero-pyeloscopy, cytologic investigation of urine, biopsy, USI, while vascular investigation is of little information value.

Metastasizing downward urinary ways.

Basic method of treatment is nephro-ureterectomy with two incisions. In recent years endoscopic resection of urethral orifice has been proposed; this allows to perform surgery of one approach.

Tumors of urinary bladder make up approximately 4% of all neoplasms. In males urinary bladder tumors are noted significantly more often, than in females (4 to 1). In development of urinary bladder tumors disturbances of metabolic exchange in the organism and congestion of urine in the urinary bladder, chronic inflammatory processes: interstitial cystitis, simple ulcer, leucoplakia, diverticulum of urinary bladder, etc.

Symptoms of tumors of urinary bladder are presented by hematuria and disuria in the most. Difficult urination from urinary bladder and upper urinary ways, disintegration of tumor and ulcer of urinary bladder wall promote joining of infection and development of cystitis and pyelonephritis. Infiltrative growth of tumor may cause squeezing of ureteral orifice, this is accompanied by pains in the area of kidneys, development of hydro-ureteronephrosis and pyelonephritis. In case of squeezing of orifices of both ureters, signs of renal insufficiency up to uremia development are joined.

Diagnostic methods: bimanual palpation of urinary bladder area allows to identify infiltrative tumors of urinary bladder; other ones – cytologic investigation of urinary sediments,

ultra-sonic investigation, excretory urography, retrograde od sedimental cystography. Spiral computed tomography with contrast study and magnet-resonance tomography are modern methods with high informativity. The main and final means of diagnostics of urinary bladder cancer is cystoscopy with biopsy.

Differential diagnostics is carried out against tuberculosis or syphilitic tumor-like granulations in the urinary bladder, tuberculosis and simple ulcers of urinary bladder, endometriosis of urinary bladder, chronic hemorrhagic, granulomatous cystitis, nodular periarteriitis of urinary bladder, tumor extension from adjacent organs. In differential diagnostics of urinary ladder tumors with all mentioned above diseases, biopsy has the most significance.

Methods of treatment of urinary bladder tumors are divided into surgical and conservative ones. Endoscopic and open surgeries are related to surgical methods. Conservative treatment consists of radiation and drug therapy; in the most cases they are additional as to surgical treatment.

Open surgeries have some variants. Transurethral electro-coagulation is a treatment method of not large superficial tumors of urinary bladder. Transurethral electro-resection is “golden standard” in the treatment of superficial tumors of urinary bladder. It may be applied for palliative treatment of muscular-invasive tumors.

Resection of urinary bladder (open) - it is a high section of urinary bladder and resection of a part of urinary bladder wall, affected by tumor within the limits of healthy tissues. In case of involvement of ureteral orifice into timorous infiltrate or location of it near the tumor, together with resection of urinary bladder, transplantation of ureter into remained part of urinary bladder is performed (uretero-cysto-neostomy).

Radical cystectomy is standard of treatment of muscular-invasive tumors. Therewith in males, together with urinary bladder prostate gland is removed, while in females – uterus and anterior vaginal wall is resected. Urine diversion in case of cystectomy is possible by means of ureters transplantation:

-on skin (uretero-cutaneostomy)

-into isolated loop of intestines, which is exteriorized on anterior abdominal wall in the form of ileostoma (conduit)

-into formed from iliac or large intestinal isolated reservoir. This method is preferable, because patient controls continence and excretion of urine.

Transplantation of ureters into intestine or non-isolated reservoir nowadays is performed not often, due to a high risk of development of ascending pyelonephritis resulting from neglecting of intestinal content and often occurring metabolic disturbances, connected with intestinal absorption of urine.

Palliative surgeries: epicystectomy (in case of continence of urine, linked with extension of urinary bladder cervix with in-operable tumor). In case of a stable disorder of urine outflow from the upper urinary ways caused by squeezing of ureters with tumor, nephrectomy (puncture predominantly) or uretero-cutaneostomy is indicated. In

advanced tumors of urinary bladder and uncontrolled bleeding, ligation of inner iliac arteries or performing of saving cystectomy is possible.

Conservative treatment consists of radiation and drug therapy. Radiation therapy as an independent treatment method in case of urinary bladder tumors is applied not often, in the main in case of inoperable tumors with palliative aim. More often this therapy is combined with surgical treatment.

Drug therapy (chemotherapy) as an independent treatment method is of little efficacy in case of urinary bladder cancer, but in combination with surgical and radiation treatment it may improve disease outcome. The most favorable results are obtained in combination of anti-tumor chemotherapeutic drugs (Methotrexate, vinblastin, adriablastin, cysplatine, hemcytabin).

Intravesical instillations of chemotherapeutic drugs – Doxorubicine amd Mytomicine-C in post-operative period are sufficiently effective in prophylaxis of relapses in case of superficial

tumors. With the aim to treat urinary bladder cancer in situ, instillations into urinary bladder are applied.

Professional algorithm of examination of patients (record of patient's supervision):

Succession of actions	Knowledgeable fundamentals of actions	Self-control
	On suspicion of renal blastoma	
Complaints and case history	Localization and character of pain. Presence of hematuria, its character initial, terminal or total). Whether either patient himself or medical stuff palpated tumor-like formation in the abdominal area. Presence of hypertension hyperthermia. Appetite, ability to work, loss of weight Onset of appearing disease symptoms their further development, initial examination and treatment	
Objective study	Skin integuments. Severity of patient's state(activity, pulse rate and respiratory rate, AP). Inspection of abdomen. Palpation of kidneys in various positions(lying supine, lateral decubitus, upright position). Inspection and palpation of external genitals. To assess state of lymphatic glands.	Paleness or purple-cyanotic color of skin. Symmetry presence of dilatation of subcutaneous veins. Whether bulky neoplasm is palpable give its characteristics. Presence of varicocele
Additional examination	USI urography. Aortography, renal selective presence of "lake-symptom" arteriography, embolization of and "pool-symptom". Venography. X-ray examination of lungs, bones of the pelvis and skull. Retrograde ureteropyelography Computed tomography	Presence of bulky neoplasm Contours of lumbar muscles, bones. Timely excretion of contrast substance, deformation, State of main artery, presence of pathologic vascularization or vascular-free zones In parenchymatous phase to determine homogeneity of accumulation of renal contrast Presence of impression and timorous thrombus in the renal or inferior vena cava. Presence of remote metastases Presence of defects of contrasting. Invasive character of tumors, state of regional lymphatic

		glands.

Benign hyperplasia of prostate gland

Etiology and pathogenesis

Benign hyperplasia of prostate gland (BHPG) becomes more actual problem both in Ukraine and whole world. Risk of disease incidence growth with age, beginning from 45-th year of life and reaches the highest figures in elder age group, reaching the highest in the old age group (older than 85 years). So, patients over 50 fall ill approximately in 45-50 %, over 70 years - in 75-80 %.

Etiology of disease is not defined to the end, though it is known, that development of disease is linked with hormonal rebuilding of the male organism. Pathologic

changes in the organs and clinical manifestations are linked with infra-vesical obstruction, which is the cause of development of urinary retention. In future pathologic changes in the kidneys may develop, leading to the development of renal insufficiency. With joining of infection in urinary bladder and kidneys on the background of urinary retention, inflammatory and degenerative changes develop.

Classification.

1-st stage: increase of prostate in sizes, dysuria disturbances, urodynamic lesions of lower urinary ways in preserved function of bladder detrusor (amount of residual urine - to 50 ml).

2-d stage: increase of prostate in sizes, dysuria disturbances, (nicturia, stranguria, imperative urges), marked urodynamic lesions of lower urinary ways in decreased function of bladder detrusor (amount of residual urine – more than 50 ml).

3-d stage: increase of prostate in sizes, dysuria disturbances, (nicturia, stranguria, imperative urges), marked urodynamic lesions of lower urinary ways in decreased function of bladder detrusor (amount of residual urine – more than 250 ml) and upper urinary ways with the signs of renal insufficiency, paradoxical ischuria.

Diagnostics

Among all investigations and testes, used in BHPG, first of all it is necessary to mention digital rectal investigation (DRI) of prostate, being the most simple and cheapest diagnostic test. Due to this fact it remains the most prevalent, despite development of new, more precise diagnostic methods. Method consists of transrectal palpation of prostate. BHPG is defined as homogeneity of gland consistency, increase of its sizes, clear contours, smoothing of interparticle sulcus. Despite of being simple, this method requires define experience in assessment of results.

Sonography is an important method in diagnostics of BHPG. In the main with this aim two types of ultrasonic investigation (USI) are used: suprapubic with filled urinary bladder and transrectal. USI is successfully used in defining amount of residual urine and diagnostics of urethohydronephrosis and other complications of BHPG.

Important task in examination of patients with symptoms of BHPG is differential diagnostics of this disease against prostate cancer. For this purpose markers are used. Prostate specific antigen (PSA) is the most widely used.

PSA was discovered and isolated in 1970 years. In its nature it is glucoproteid with molecular mass of 34 к. It is specific for epithelial cells of prostate ducts and does not form in other tissues of the organism and tumors. PSA also has marked immunogenic peculiarities, on their basis precise methods of its defining radio-immune and immune-enzyme are developed. Normal level of PSA in blood serum depending on methods of its defining is 1,5-3,0 ng/mol. PSA is not formed in women. It is observed increase of its level in 70-95% of patients with prostate cancer and marked positive correlation with stage of process, level of tumor differentiation and treatment efficacy. Sensitivity of this method is 65-88%, specificity – 42-90%.

CT (computed tomography) and MRT (magnet-resonance tomography) are used in diagnostics. But in case of BHPG these methods have intermediate significance.

Treatment

On the initial stage of the disease conservative treatment is used successfully. Prevalent majority of agents, developed for treatment of BHPG do not have proved impact on adenomatous tissues directly. However, they effectively eliminate symptoms and simultaneously significantly improve quality of life f these patients. The most active in this direction are agents of group of alpha-adrenoblockers. They block receptors in cystic cervix and eliminate symptoms of its irritation. Besides, these agents lead to relaxation of smooth muscles of cystic cervix and prostate, their shortening together with mechanic pressure on urethra of adenomatous tissues complicates urination. This favors not only subjective improvement of patient's state, but change of such objective parameters as increase of urination rate, decrease of amount of residual urine, decrease of risk of development of acute urinary retention as well. Blockers of 5-α-reductase are able to decrease prostate size at the expense of adenomatous component, and to inhibit growth of prostate.

Trans-urethral resection of prostate (TURP) is the most often used method of surgical treatment. In the volume of prostate more than 80 cm3 prostatectomy is performed. In case of a severe state of a patient, caused by development of BHPG complications, with the aim of temporary taking of urine, constant urethral catheter or suprapubic cystostoma are used.

Prostate gland cancer (PGC)

Epidemiology, etiology, pathogenesis

Incidence of PGC in Ukraine and in the world continues to grow. Over the last 6 years in Ukraine it grew from 10,9 to 12,8 per 100 000 of population, therewith cancer of III and IV stage is observed in 55 % of patients.

Causes of PGC are not clear in the full, but data of experimental and clinical investigations testify that pathology is caused by impairment of endocrine regulation of balance of sexual hormones.

Pathologic anatomy and classification.

In the prostate gland it is conventionally to distinguish posterior and lateral lobes. The most often timorous foci are revealed in posterior part – 53,6 %, in lateral parts – 38,5 and the most rarely in the anterior part – 7,9%. The most prevalent variants are: renal cell tubular-alveolar carcinoma 24,8%; chromophobe tubular carcinoma – 19,4%; anaplastic adenocarcinoma – 14,5%.

Symptom complex

On the initial stages course of the disease is free of symptoms. In the advanced stages it is observed

-dysuria;

-hematuria;

-pains;

-disorders of defecation;

-renal insufficiency

Diagnostics:

Diagnostics of PGC includes patient's complaints, thoroughly taken anamnesis, palpation, digital rectal examination. Revealing of increased PSA in the blood and acid phosphatase. Plain X-ray examination, KT, MRT osteoscintigraphy. Ultrasonic transrectal and transabdominal investigation. Puncture biopsy of tumor.

It is important to define stage of tumor, its localization, spread and invasion, presence or absence of regional and remote metastases. It is the task of diagnostics to assess state of upper and lower urinary excretion ways. It is necessary to define stage of operation risk and solve the question of patient's operability, to choose treatment method.

Treatment:

Surgical methods are leading in treatment. Radical prostatectomy, palliative surgeries, castration, hormonal therapy (agonists (antagonists) of gonadotropic releasing-factor, anti-androgens, estrogens), radiation therapy, chemotherapy.

Testicle cancer

Epidemiology, etiology, pathogenesis

Testicle cancer makes up approximately 1–1,5% of all malignant neoplasms in males. This is the most prevalent cancer, affecting young males of the third-forth decade of life. Causes of development of these tumors are not clear in full, but it is known, that risk of development of testicle tumors increases many times in children with timely not treated cryptorchism, traumas of testes, Kleinefelter's syndrome, after action of ionizing radiation. During the last decades stable growth of testicle cancer incidence is observed. The majority of these tumors come from germinogenic cells (seminomal and non-seminomal germinogenic cancer of testis), in more than 70% of patients I stage of disease is diagnosed.

Pathologic anatomy and classification

Epithelial testicle cancer may be divided into three categories: a) germinogenic tumors (seminoma, embrional carcinoma, choriocarcinoma, teratoma, tumor of yolk sac) b) tumors of sexual stroma (tumor from Leidigh's cells, tumor from Sertoli's cells, granular-cell tumor) c) mixed germinogenic/stromal tumors. According to classification germinogenic tumors make up 90-95% of all testicle tumors.

Symptoms

The most often symptoms of testicle tumors is induration of testis in the form of node, as a rule one-sided. As tumor grows, pain in the testis along spermal cord may join. In 10% of cases dropsy of testicular membranes joins. Hormonal activity of some testicular tumors causes changes of secondary genital signs. In 5-10% of cases growth of breasts gynecomasty) is observed. If testosterone produces testicular tumor (male sexual hormone), in boys pubertas precox begins.

VIII. Instructions and explanations on implementation practical assignment (sample typical task)

1) Male patient, aged 48 was admitted to in-patient unit with complaints on fatigue, weakness, periodically occuring pains in the right hypochondrium over one year period. On palpation: in the right hypochondrium tumor-like formation, movable. Varicocele is in the right side, does not disappear in the supine position.

Diagnosis? What is necessary to do to precise diagnosis?

ANSWEAR: Tumor of the right kidney. To confirm diagnosis it is necessary to make X-ray investigation.

2) Female patient, aged 45 years was admitted to in-patient unit with complaints on elevation of temperature during 3 months, malaise, weakness, pain in the left hypochondrium, elevated AP. Objectively: paleness of skin integuments. In the left hypochondrium hard, motionless tumor-like neoplasm is palpable. In roentgenoscopy of stomach, it is located medial. On excretory urography defect of filling of renal pelvis and calices of the left kidney is seen.

Diagnosis? Treatment plan

ANSWEAR: Tumor of the left kidney. Nephrectomy is indicated.

3) Female patient K., 50 –years old was admitted complaining on macrohematuria, which appears suddenly. Kidney is not palpable. On cystoscopy: discharge of blood from orifice of the right ureter.

Diagnosis? Plan of examination.

ANSWEAR: Tumor either of right kidney or ureter. Urologic investigation is indicated.

4) 52-year-old patient has palpable tumor-like formation, sizes 10 x 8 cm with dense tuberous surface in the right hypochondrium. On percussion: tympanitis over the formation. Data of excretory urography do not give possibility for sure to rule out disease of the right kidney.

What methods of investigation give possibility to confirm or rule out urologic disease?

5) 34-year-old patient has been working at enterprise of aniline colorings for years. Over the last 3-months period frequent, sometimes painful urination is observed. Periodically dull pain in the lower abdomen develops. Patient went to seek a doctor at skin and venereal diseases clinic. Specialists in skin and venereal diseases ruled out gonorrhea and trichomoniasis.

On objective examination (tomography including) pathologic changes were not revealed; leukocytes are 3-5 in the field of vision, erythrocytes are recent, 8-10 in the field of vision.

What disease may be thought of? What must be done to establish diagnosis?

6) 62-year-old patient complains of periodic appearance of blood with clots in urine. Has been sick for 6-month period, the last 3 months has been feeling sharp pain in frequent urination. Nutrition is reduced, pale. Kidneys are not palpable. Pasternatsky's symptom is negative from both sides. On palpation over the pubis – moderate tenderness. Flow of urine is without changes. On rectal manual examination prevesicle gland, sizes 3x4 cm of soft elastic consistency is revealed.

What is initial diagnosis and plan of examination.

IX. Tasks for independent work of students (examples of situational problems and their solutions)

Approximate map for the independent work with sources.

Main tasks	Instructionsf or the training actions
To learn: 1. Epidemiology of MGT	To characterize the level and dynamics of MGT morbidity
2.Reasons of MGT development	To name etiological and pathogenic factors of MGT development
3.Classification of MGT	To list the main kinds of classification
4. General and local symptoms of MGT	To list the main general and local symptoms of MGT
5. Extra methods of examination of the patients	To give a list of the leading extra laboratory and instrumental methods of the patients' examination
6. Main complexes of treatment of the patients with MGO cancer	To make up typical schemes of the patients' treatment

Situational tasks

1. A 65-year-old patient noticed the presence of dysuria and pains at the end of urination two weeks ago. Prostate cancer T2 NO MO was diagnosed in the patient by the findings of USE, digital examination, the level of prostate-specific antigen, biopsy. What is your therapeutic approach? The model of the answer: Radical prostatectomy with the following hormonal therapy.

2. Prostate-specific antigen 23,2 kg/ml was determined in a 50-year-old patient B. Prostate was tuberous and dense in X-ray examination. What disease can you think of?

The model of the answer: Prostate cancer.

What is a plan of examination?

The model of the answer: USE, biopsy, RO-graphy of the chest organs. There is osteoscintigraphy, MRT or CT in cases of suspected tumor

3. A 65-year-old man took a medical advice at the reception ward complaining of dysuric disorders, discharge of blood with urine at the end of urination. Enlarged, heterogenous prostate, signs of left side ureterohydronephrosis II were revealed during examination. .

Initial plan of examination and treatment. The model of the answer:

Excretory urogram, X-ray of the lungs, bones of pelvis, CT or MRT must be done. Prostate specific antigen. Biopsy of the prostate. Based on the conditions of the problem, the patient has got tumor of the prostate. Surgical treatment i.e. radical prostatectomy is administered to the patient.

Professional algorithm of patient examination.

Task	Approximate basis of actions	Self control
	Localization and nature of the pain. Time of appearance of the first signs, the nature of urination	
To find out the complaints and case history		
Objective examination	To estimate the patient's condition To perform digital examination of theprostate through the rectum. As wel as examination and palpation of male genital organs	The pulse, blood pressure, RR Enlarged prostate gland that has dense chondroid or bone-like consistency may be palpated.
Laboratory findings	Complete blood count, complete urinalysis, biochemical examinations Determining of PSA level in the blood, chorionic gonadotropin, alpha fetoprotein	The number of leukocytes, leukogram, the number of erythrocytes, hemoglobin, ESR, urine pH, protein, erythrocytes, leukocytes. Urea creatinine.
Findings of extra diagnostic measures	X-ray, CT, USE, MRT. Biopsy. Osteoscintigraphy	Plain urogram. Excrectory urogram. Cystography. Vesiculography.
Determining of the initial diagnose	To make a diagnose of the main disease, its complications, presence of other urological diseases, accompanying pathology	
Treatment plan	Surgical. Conservative.	Radical prostatectomy, cystostomy, TURP, J. Ducuing operation, M. Chevassu operation. Hormonal therapy. Radiation, systemic chemotherapy

X. Control of knowledge (test theme base for variants) "Tumors of the urinary organs"

1. Kidney cancer is the most common cancer for:

a) men
b) women
c) children
d) nobody ill
e) women, men, children
2. May kidney cancer spread to the bones of the pelvis, spine, skull?
a) yes
b) no
c) only to the skull
d) only to the spine
e) only to the pelvic bones

3. Varicocele may be a sign of:
a) chronic pyelonephritis
b) kidney cancer
c) urinary bladder cancer
d) chronic glomerulonephritis
e) urolithiasis

4. Painless gross hematuria may be a sign of:
a) kidney tumor
b) urolithiasis
c) chronic pyelonephritis
d) nephroptosis
e) ectopic kidney
5. Is excretory urography indicated for the diagnosis of renal tumors or not?
a) yes
b) no
c) only if the right kidney tumor
d) only at the left kidney tumor
e) only at the tumor both kidneys
6. The most reliable method for the diagnosis of bladder cancer is:
a) cystoscopy
b) ureterocystography
c) miction cystography
d) ureteroscopy
e) plain urogram

7. Is subrenal anuria may occurs in tumors of the genitals?
a) yes
b) no
c) at an early stage tumors
d) in pre-clinical stages tumors
e) in older women only

8. The main treatment method for urinary bladder cancer is:
a) operative
b) intravenous chemotherapy
c) external radiation therapy
d) intravesical chemotherapy
e) combined treatment

9. Benign prostatic hyperplasia developes from:
а) seminal colliculus
б) prostate gland tissue
в) paraurethral glands
г) the prostatic urethra
д) seminal vesicles

10. Digital rectal examination in prostate cancer:
a) the prostate is soften
b) painful while palpation
c) prostate gland size reduction
d) dense areas of wood consistency without clear borders
e) soft, smooth surface of prostate

11. The most important in etiopathogenesis of prostate cancer is:
a) adrenal hormones
b) testicular hormones
c) the anterior pituitary lobe hormones
d) prostate dysfunction
e) estrogens

12. The main reason for acute urinary retention due to benign prostatic hyperplasia is:
a) obstruction of the urethra
b) reduce the ability of detrusor muscles contraction
c) phlebostasis of urinary bladder neck
d) urethra swelling
e) the swelling of the prostate gland

13. The presence of residual urine due to:
a) the presence of urinary bladder stones
b) increase of the urinary bladder capacity
c) the degree of detrusor decompensation
d) urethral stricture
e) detrusor hypertrophy

14. The main feature at normal digital rectal examination of the prostate is:
a) the mucosa of the rectum is fixed, has plicated formations, prostate is tight
b) rectal mucosa is mobile and smooth, surrounding tissue is free, prostate is elastic
c) moving mucous rectal mucosa is mobile, surrounding tissue is tight, prostate has elastic consistency
d) prostate has a wood density
e) prostate has a cartilage density

15. Accurate diagnosis of prostate cancer is based on:
a) determination of blood acid phosphatase
b) determination of blood PSA (prostate specific antigen)
c) prostate biopsy
d) digital rectal examination
e) prostate ultrasound

16. Differential diagnosis of benign prostatic hyperplasia and prostate cancer is best done with:
a) the prostate ultrasound

b) expressed prostatic secretion (EPS) microscopy
c) needle prostate biopsy
d) determination of blood PSA (prostate specific antigen)
e) plain urography
17. The most effective drug for treatment of prostate cancer is:
a) Microfollin. (ethinylestradiol)
b) sinestrol
c) Zoladex
d) honvan
e) Chlortrianisenum

18. At what stage of benign prostatic hyperplasia there is no residual urine:
a) stage 2
b) 3 stages
c) 1 stage
d) residual urine is a nonsense
e) at all stages

XI. Methodological support:

1.Methodical recommendations for students on this topic
2.Theses of the lecture on this topic
3. Set of situational tasks
4. A set of tests on the topic of options
5. Schemes and tables
6. Devices and equipment for practical work

XII. Recommended Books:

A) Basic:

1. Urology. E.M.Shimkus,S.E.Shimkus./Simferopol, IAD CSMU, 2005.
2. Radiation oncology physics: a handbook for teachers and students international atomic energy agency Viena, E.B. Podgorsak Technical Editor.
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7. Chernenko, V., Chernenko, D., Klyus, A., & Shylo, V. Clinical efficacy of the combined therapy of patients having urolithiasis using the biologically active additions (BAD) "Prolith". Urology. 2011.- (1), 27-32.
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9. Sas D. J. Incrasing incidence of kidney stones in children evaluated in the emergency department / D. J. Sas. – Pediatr. – 2010. – №157 (1). P. 132-137.
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11. Modi P, Helfand BT, McVary KT.: Modifications and surgical interventions for benign prostatic hyperplasia are potential confounders of prostate-specific antigen. //Curr Urol Rep 2010;11:224–7.

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Additional

1. Clinical Radiology made ridiculously simple. Hugue Ouellette, M.D. Patrice Tetreault, Published by Med Master, Inc. P.O. Box 640028 Miami FL 33164.
2. Атлас-руководство по урологии. Под ред. А.Ф.Возианова, А.В. Люлько.- Днепропетровск, 2002.-Т.1,2,3.

METHODICAL DEVELOPMENT OF A PRACTICAL LESSON

TOPIC: URGENT AID IN UROLOGICAL DISEASES.

Place - study room, wards.

Actuality of the theme:

Necessity of students' studying of this section of urology is determined by the fact that many urologic diseases of the genitourinary system requires emergency care forthe patients. Thus, knowledge of this theme is obligatory for a doctor of any field of medicine.

In independent studying you should pay particular attention to etiological agents that cause urgent urological disease to provide proper care, and then direct the patient to the urologist for a more detailed examination and treatment.

Educational aims:

In independent studying one should pay particular attention to etiological agents that cause urgent urological disease to provide proper care, and then direct the patient to the urologist for a more detailed examination and treatment.

II. The final results of mastering the topic

In accordance with the requirements of the master's level standard,
students after studying this topic should

Know:

- ✓ To learn the principles of diagnostic and therapeutic approach in urgent conditions of urinary system.
- ✓ main reason and clinical manifestation of urgent conditions of urogenital system.
- ✓ pathogenetic mechanisms of development of urgent diseases of the urogenital system.
- ✓ differential and diagnostic criteria for major clinical manifestations of urogenital emergency conditions to evaluate the patient state.
- ✓ Examination methods in urgent urological diseases.
- ✓ Therapeutic modes of urgent urological diseases.

A student must be able to:

- Develop algorithms for diagnostic and therapeutic approach in renal colic, anuria, acute retention of urine, bleeding, acute pyelonephritis, traumatic injuries of the urogenital system (material of lectures, textbooks).
- To show main methods of rendering aid assist in urgent urological diseases (dummy).
- Have specialized (subject) competences
- To assess the prognosis about the recovery and restore of functions in patients with urgent urological pathology (material of lectures, textbooks).

Have specialized (subject) competences:

To assess the prognosis about the recovery and restore of functions in patients with urgent urological pathology (material of lectures, textbooks).

Special (professional, subject) competencies					
1.	The ability to make a provisional clinical diagnosis of an illness.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children. To know the standard examination methods and diagnostic algorithms. To know the algorithms of finding the guiding symptoms and syndromes (according to the list 1) and of making provisional and clinical diagnoses (according to the list 2). To know the methods of laboratory testing and instrumental examination (according to the list 3). To have the knowledge of patient's state evaluation.	To know how to make a physical examination of a patient; to know how to take a reasoned decision concerning finding a guiding clinical symptom or syndrome; to know how to make a provisional diagnosis (according to the list 2); to know how to prescribe a laboratory test or an instrumental examination of a patient (according to the list 3) by using standard methods.	To keep medical records of a patient (an outpatient/inpatient card, an individual child development card) basing on the practice guidelines.	To be responsible for taking reasoned decisions and actions that concern making a provisional diagnosis of an illness keeping to the ethical and legal rules.
2.	The skills of gathering information about a patient.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the methods and standard schemes of questioning and examining patients of different age groups.	To know how to talk to a patient (including a child and his/her parents) basing on the algorithms and standards, how to examine a patient using standard methods. To know how to examine psychomotor and physical development of a	To make appropriate medical records concerning the health status of an adult or a child or prenatal development of a fetus.	To be responsible for a qualified information gathering that includes an interview, questioning, examination, palpation, percussion of organs and systems and timely evaluation of a person's health

		To know the methods of prenatal development evaluation. To know the stages and methods of psychomotor and physical development evaluation in pediatrics.	child. To know how to evaluate health status of a person (including one of a child).		status, psychomotor and physical development of a child and prenatal development of a fetus. To be responsible for responding appropriately.
3.	The ability to evaluate the results of laboratory tests and instrumental examination.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups. To know the standard methods of laboratory tests and instrumental examination (according to the lest 4).	To know how to analyze the results of laboratory tests and instrumental examinations and evaluate the information about the diagnosis of a patient using these results (according to the list 4).	To prescribe reasonable laboratory tests and instrumental examinations and evaluate their results (according to the list 4).	To be responsible for taking decisions concerning the evaluation of the results of laboratory tests and instrumental examinations in different age groups of children.
4.	The ability to diagnose the emergency cases.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups and standard methods of examining patients (at home, in the street, in a medical institution) under the circumstances of lacking information.	To know how to evaluate a person's status and make a diagnosis (according to the list 3) by taking a reasonable decision using the standard methods under the circumstances of lacking information.	To take a reasonable decision concerning the evaluation of a person's condition, diagnosis and taking necessary medical measures depending on the person's condition sticking to the corresponding ethic and legal rules under any circumstances. To fill in the appropriate medical records.	To be responsible for the timely and effective medical measures of emergency condition diagnosing.
7.	The ability to analyze the skialogic pattern of an X-ray image, CT and MR scans, ultrasonic and Doppler scans.	To have a specialized knowledge of humans, their organs and systems, anatomical and physiological peculiarities of children of different age groups, pathologic anatomy and physiology and principles of diagnostic imaging.	To be skilled in analyzing the diagnostic images obtained by using different radiological investigations.	To make conclusions based on analyzing and processing of the information from the X-ray images, tomographic images, MRI scans, ultrasonic scans, scintiscans.	To be responsible for qualified and timely processing and analyzing of the information from the different types of diagnostic images.

III. Term of studies 4acad. hours.

IV. Plan of the class:

Stages of the lesson	Time	Equipment
1.Organisation part of the visit control. Introducing students to the topic, purpose and plan of the lesson. Definition of evaluation criteria.	5	Training journal
2.Introduction: The teacher's control of the basic level of students' knowledge on this topic on the basis of their independent preparation for the lesson by the method of oral questioning or input test control (a list of questions or test samples in section V).	20	Tests, standards,
3. The main part: Studying, taking notes, students discussing and explaining by the teacher the most important terms, concepts, certain problematic issues of a topic using methodological recommendations for students. Analysis and assimilation of the graphological structure of the topic. Briefing. Performing a practical task according to options and forms (group and individual). Verification and evaluation of completed tasks.	120	Textbook, lecture notes, guidelines, medical history, patient demonstration
4. Self-student work: Performing individual situational tasks according to the options proposed by the teacher. Individual control of decision results.	20	Situations of tasks, educational analyzes. training journal
5. The final part: Final test control of knowledge and skills on the topic. Grades for each student.	15	Training journal
Homework.		
academic break	10	
180 minutes together		

V. List of control questions

1. Name the main symptoms\sings of renal colic.
2. What is acute urinary retention?
3. Name the reason of the prerenal form of the anuria.
4. Name the cause of renal anuria form.
5. Hematuria and its species.
6. What is the difference between the acute urinary retention and the anuria?
7. List the inflammatory diseases of the kidney.
8. Name the main etiological factors of acute pyelonephritis.
9. What are the forms of the purulent pyelonephritis. 10.What are the main features of acute pyelonephritis.
10. Name the classification of closed injury of the kidneys.
11. What are the clinical signs of the damage ofurethra.
12. What are the methods of treatment of the out- and intra- peritoneal rupture of the bladder.
13. What is the conservative treatment of renal injury of the kidney.

VI. Structural-logical scheme of the lesson content:

Renal colic is the most frequent symptom of urgent urological diseases. The patients with renal colic consult a GP which must be sure in the correctness of the diagnose before treating of the attack. It follows that knowledge of symptoms of renal colic and its differential diagnosis is obligatory for the doctor of any field.

Acute retention of urine requires emergency care. In this case a doctor must determine the cause of its appearance to provide proper care.While providing care to the patients with anuria it

is necessary to determine its type (prerenal, renal, postrenal). Otherwise treatment will be incorrect.

Hematuria is a frequent and important symptom. There are initial hematuria, terminal hematuria and total hematuria that is determined by three-glass test. It depends on localization of the source of bleeding.

Besides type of hematuria we should pay attention to the character of clots of blood because we may judge about source of bleeding by their forms (long worm-like clots indicate haemorrhage from kidneys while big formless clots indicate haemorrhage frombladder).

Any hematuria should be considered as a condition that requires emergency. Acute inflammatory diseases of urogenital organs also requires emergency. These include: acute pyelonephritis, acute paranephritis and bacteriemic shock.

Colon bacillus, different kinds of proteus, enterococcus and also different kinds of microbal associations are the most frequent causative agents of the disease. Causative agents penetrate into bile ducts by hematogenic, urinogenous andascending ways. Both general and local factors contribute to appearance of the disease. Supercooling, infectious diseases, diabetes refer to the general factors, disturbance of urine outflow from kidneys refer to the local factors.

Pain in lumbar area, highte mperature, fever and changes in urine (pyuria, bacteriuria) are main clinical symptoms.

Traumatic impairments of urogenital organs require emergency medical aid. Road traffic incidents, falls, sports injuries are the most frequent causes of traumatic injuries.

Pain in lumbar area, hematuria, and swelling are characteristic signs of kidney trauma.

There are intraabdominal and extra abdominal traumas ofb ladder.

Impairment of urethra is often localized in its posterior part.

Emergency aid for urgent urological diseases.

	Educational elements	
Pain in urinary tract	Renal colic, the pain in bladder, the pain in urethra	Symptomatology the reason he differential diagnosis therapeutic methods of treatment
Disorders of urination. The quantitative changes. The qualitative changes in urine	Acute urinary retention. Anury Hematuria	Neuro-reflexical mechanical prerenal, renal, postrenal initial, terminal, total
	Acutepyelonephritis	
Factors that contribute to	Disorder of urodynamics. Anomalies of development (maldevelopment). Instrumental intervention	
Stages	Serous Purulent	Pertaining to apostema pyelonephritis, cuebuncle, the abscess of the kidney
Diagnostics	Palpation, ultrasonography, plainand excretory urography, the analisis ofblood and urine	Interpretation of test results
Clinic	Painin the lumbar area, high body temperature, fever, changes in the blood and urine	

The methos of diagnostics	clinical examination Laboratory methods Endoscopic methods X-ray methods Ultrasound, X-ray, computer tonogram.	increase of the kidney Chromocystoscopy plain and excretory urography
Diagnostical features	Disfunction of the kidney Changes in the blood and urine Changes in the structure of the kidney Changing in the size of the kidney	
Complications	Chronical pyelonephritis	Acute and chronic renal failure, nephrogenic hypertension, pyonephrosis
Treatment	Operational Conservative	Drug treatment. Sanatorium and spa rest Diet therapy
	Injuryof the kidney	
Classification ofclosed injuries	Slaughter of the kidney Rupture of the fibrous capsule. The ruptureof parenchyma, which does not pass on the cavity system. The ruptureof parenchyma, passing on thecavity system Crushingthe kidney Abruption ofkidney from the vascular pedicle	
Clinic	Pain in the lumbar area Hematuria Swelling	
Diagnostics	Chromocystoscopy plain and excretory urography, Ultrasonography	The lack of contours of kidneys and lumbar muscles, poor contrast filling cavity system infiltration of contrast, the lack of kidney function
Clinic of the open damage	Hematuria, pain in the lumbar area, urine discharge in the wound	
Treatment	Operational Conservative	Bed rest, hemostatycs analgesics, anti-bacterial drugs
Classification	Open, Close Out-and intra-peritoneal	corellation between the fractures ofpelvic bone and the rupture of peretoneal
Symptomatology of the peritoneal rupture	The pain over the pubis, hematuria, swelling disorders of the urination	Irradiation of pain in the perineum, increased pain during the urination urge unreal urge to urinate, accompanied by tenesmus, discharge of small amount of urine, no urinary retention
	Palpation of the abdomen, the presence of urinary infiltration,primar y localization	Tension of the abdominal wall above the pubis the dullness on pubis at the percussion has no

	of pain in abdomen	clear boundaries
Features of intraperitoneal rupture	The vague nature of the pain around the stomach, the tensity anterior abdominal wall the dullness in the shallow areas of abdomen, peritonitis	
The leakageof the urine at open damage Diagnostics	Catheterization of the bladder	The lack of the urine during the catheterization, the allocation of a small amount of the urine coloured with blood, the discharge of a large number that is bigger than the volume of the bladder
	Opportunities and danger of the cystoscopy Retrograde cystography	X-ray in two projections. Deferred cystography. Leakage of the contrast outside the bladder
Ttreatment	Conservative Operational	Bed rest, hemostatics, analgesics, anti- bacterial drugs. Catheterization of the bladder. In intraperitoneal rupture - laparotomy. Closure of injuries in women tightly,in men - cystostomy. Drainage of leakageurine by McWorter Buyalsky. If it is out abdominal - stitching gap with leaving cystostomy in men and women. Drainaging urine by McWorter Buyalsky
	Damage ofurethra	
Mechanism ofclosed damage	Damage of the bulbar part,membranous andprostatic part fractures of the pelvic bones. Instrumental injury	
Classification by the degree and the type	Partial and full open and closed	Urinary infiltrations, urohematoma,development ofurosepsis
Symptomatic	Pain in perineum perineum urohematoma Uretroraphy acute urinary retention Increased pain during the urge of urination	The appearing of uretroraphy during the pressure on the prostate gland
Diagnostics	Ascending and voiding urethrocystography	
Treatment	Conservative Operational	Bed rest, hemostatics analgesics, antibacterial medicine, permanent catheter. Imposition cystostomy + drainage of perineum urohematoma primary suture of uretra with the following plastic of urethra

VII. The most important terminological concepts and theoretical issues of the topic

Professional algoriphm of the examined patient

Tasks	the sequence of the exercution	Remarks. Methods of the control
Master the method of the interpretation ofurinalysis	Write out normal indexes of urinalysis. Compare received urine analysis from the history of disease with the norm. Make conclusions	
Make thetest of three glasses. By the the source of bleeding shape of hematuria identify	Explain to the patient how to make the test. Estimate the results	
Be able to distinguishanuria from the acute urinar y	In the acute retention of urine the bladder is full, but anuria - empty	
Perform palpation of the kidneys in different positions	1Lying on his back. 2. On the right side, on the left side3. In the position of standing	Pay attention to the size, the shape, the mobility, the pain
Master percussion of the bladder		
Complaints and history	The nature and localization of the pain results of the previous studies.. effectiveness of the previous treatment	
objective examination	estimate of the patient's state Make the abdomenal palpation of the kidney	Pulse, blood pressure, respiratory rate. Can be palpable enlarged and painful kidney
Results of the laboratory studies	General analysis of the blood, biochemical of blood	The number of leucocytes, erythrocytes, leycoformule, ESR
The results of the additional methods	X-ray examination, ultrasound, computer tonoghram, magnetic resonance therapy	plain and excretory urography: size, shape, contours of the kidney, the thickness of parenchyma,function
Set a diagnosis	Set a diagnosis of the main disease, its complications, which is accompany the pathology	
The choice of the medical approach	Conservative Operative	Drug, Spa and sanatorium. Decapsulation, nephrostomy, cystostomy

VIII. Instructions and explanations on implementation practical assignment (sample typical task)

1. The patient '30 years old has complaints ofpain in the right part ofabdomen, nausea, vomiting. He began to be sick 2 hours ago. OBJECTIVE: the body temperature is - 36.50 C, the

pulse is - 62, the kidneys are not palpable.Pasternatsky's symptomis positive in the right. In palpation –the pain in the right iliac region. There isn't peritoneal signs there. The urination is rapid, in small portions. What is the diagnosis? What studies can confirm this?

Answer : think about the presence of the appendicitis or renal colic. Additional examination:blood and urine tests, ultrasound.

2. The patient '65 years old has the complaints of pain in the lumbar area, increased body temperature nearly 38 ° C, and fever. OBJECTIVE: there is pain in palpation, the muscle tension and palpable tumor formation in the right hypochondrium, it's movable.Pasternatsky's symptom is positive in the right. Diagnosis?

Answer: the right sided acute pyelonephritis.

3. The patient is 40 years old . Clinically and radiographically extra-peritoneal rupture of the bladder was diagnosed. What is your treatment tactics?

4. The patient'42 years old has the complaints ofpain in the lumbar area to the left, which is emerged after the falling from the height of 3 meters. Itwas noticed the gross hematuria. The general condition is not bad. The blood pressure and the pulse is normal. There is a little pain and swelling in the left lumbar area. Diagnosis? How it can be confirmed?

Answer: the closed trauma of the left kidney. Ultrasound examination, plain and excretory urography.

IX. Tasks for independent work of students (examples of situational problems and their solutions)

What is the sense of the total leykocyturiya?

1. Pyelonephritis
2. Chronic prostatitis
3. Nephroptosis
4. Cystitis

What is the consecution of the examination of the patient to gross hematuria?

1. Cystoscopy;
2. Test of three glasses;
3. Ultrasound;
4. Plainand ecscretory urography;
5. Emergency hospitalization

X. Control of knowledge (test theme base for variants)
Topic "Emergency in urological diseases"

1. A woman of 45 y.o. came to the hospital complaining of acute pain in left lumbar area. Pain appeared two days ago, since that time produced 180 ml of urine. The right kidney was removed due to calculouse pyonephrosis. Ultrasound examination – dilatation of pyelocaliceal system of solitary kidney. What should we do first?

a) Percutaneous nephrostomy.
b) excretory urography.
c) chromocystoscopy.
d) Symptomatic treatment with analgesics and antispasmodics.
e) Retrograde ureteropyelography

2. The patient 50 y.o. provided Wertheim's hysterectomy operation due to malignant genitalia formation after which there is an acute renal failure (ARF) developed. Ultrasound revealed dilation of both pyelocaliceal system. What kind of ARF may we suppose in this case?

a) prerenal.
b) Renal.
c) Arenal.
d) reflectory.
e) Postrenal.

3. The patient of 46 y.o. with benign prostatic hyperplasia presented with an acute urinary retention. What should we do to provide differential diagnostic between anuria and acute urinary retention?

a) ultrasonography.
b) Urinary bladder catheterization.
c) excretory urography.
d) cystoscopy.
e) cystography.

4. Patient 35 y.o. is hospitalized complaining of severe pain in the right lumbar region. Pain irradiated in the right testicle. It is noted nausea, vomiting, frequent urination. In the analysis of urine - haematuria. What is the most likely diagnosis?

a) Acute appendicitis.
b) Acute orchoepididymitis.
c) Right side renal colic.
d) hipernefroma of right kidney.
e) Acute pyelonephritis.

5. The patient of 24 y.o. complains of pain and swelling of the penis. The patient reported that when the foreskin of a penis becomes trapped behind the glans penis, and cannot be reduced (pulled back to its normal flaccid position covering the glans). Objectively, there is swelling of the glans penis and hyperemia. Your diagnosis.

a) paraphimosis.
b) phimosis.
c) injury of the penis.
d) acute balanoposthitis.
e) Acute cavernitis.

6. The patient of 24 y.o. complains of pain and swelling of the penis. The patient reported that when the foreskin of a penis becomes trapped behind the glans penis, and cannot be reduced (pulled back to its normal flaccid position covering the glans). Objectively, there is swelling of the glans penis and hyperemia. What urgent measures are needed?

a) Pulled back the skin of glans penis, in case of ineffectiveness - front ring skin cut .
b) Administer painkillers and antispasmodics.
c) Attach cold and apply compression bandage.
d) To prescribe antibiotics and antiseptics.
e) Administer antibiotics and uroantyseptyky.

7. The patient of 75 y.o. complains to inability to urinate within 12 hours. Palpation of the abdomen revealed the increased bladder. Attempts to provide urinary bladder catheterization with rubber and metal catheters were unsuccessful. What should be the doctor's tactics?

a) Administer the patient painkillers and antispasmodics.
b) Provide a suprapubic puncture of urinary bladder.

c) Provide an electrical stimulation of the bladder.
d) Place the patient in a hot bath.
e) Administer antispasmodics and provide a re-catheterization of the bladder with rubber catheter.

8. Boy of 16 y.o. complains of pain in the right iliac region with irradiation in the scrotum, increasing of its size. Body temperature is 37.80. Three days ago, while football play, the boy got hit with ball into the scrotum. Objectively: skin is pale. Examination the scrotum revealed slight redness of the skin. Palpation: thickening and tenderness of epydidimus. What is the diagnosis?
a) Acute orchitis.
b) epydidimal cyst.
c) Acute post-traumatic epididymoorchitis right side.
d) testicular torsion.
e) Acute hydrocele.

9. The patient of 35 was admitted after car accident. When injury occurs gross haematuria with blood clots. Hemodynamic is stable. What urgent investigation is necessary for diagnosis?
a) Biochemical blood tests for determination of urea and creatinine.
b) Coagulogram.
c) Analysis of urine by Nechiporenko.
d) excretory urography.
e) radioisotope renography.

10. The man of 46 y.o. complains to difficult urination, pain in the perineum, raising the temperature up to 40°C. External genitalia are normal. Rectal - prostate is enlarged, hard, painful. Ultrasound revealed hypoechoic prostate formation of 1.5 cm in diameter with the outer capsule, rough inner surface and variable internal content. In the blood Leuk. - 18x109 WBC/hpf; blood sedimentation rate test - 48 mm / h. Urine protein - 0.66 g / l; Leuk. - 10-15 WBC/hpf. What is your diagnosis?
a) BPH complicated with prostatitis.
b) Acute prostatitis.
c) Paraproctitis.
d) Prostate cancer.
e) Abscess of the prostate.

11. Patient of 64 years hospitalized with complaints of difficult urination. 20 hours ago the patient felt full urinary retention. After catheterization 800 ml of urine was avacuated, with no visible blood. Palpation revieled enlarged urinary bladder. What are the primary methods of diagnosis?
a) excretory urography with descending cystography.
b) computed tomography.
c) ultrasound of the genitourinary system.
d) cystoscopy.
e) rectal examination of the prostate.

12. The patient in of 42 complains of paroxysmal pain in the right lumbar area, which irradiates the right side of the scrotum, nausea, frequent urination. Felt ill an hour ago. Blood Leuk.: 7,4×109, Neutrophils-7, blood sedimentation rate test - 22 mm / h, erythr.-3,6×109. Urinalysis - protein 0.033%, leuk.-10-12 WBC/hpf, erythr.-30-40 WBC/hpf. Your diagnosis?
a) Renal colic.
b) stone disease.
c) Hepatic colic.

d) Ectopic pregnancy.
e) Acute cholecystopancreatitis.

13. The patient of 47 y.o. after falling from a height felt a sharp pain in lumbar area, when urination red color of urine was seen. In the analysis of urine - hematuria, X-ray and US of kidneys were normal. Your diagnosis?
a) Acute pyelonephritis.
b) Acute cystitis.
c) Prostate adenoma.
d) Contusion of the kidney.
e) Urethra injury.

14. Patient of 44 y.o. was hospitalized with fracture of the pelvis. A few hours after started to complain of the inability to urinate, calls for urination were presented, felt a pain in the suprapubic area. Examination revealed a full bladder. The most possible preliminary diagnosis?
a) Acute pyelonephritis.
b) prostate adenoma.
c) Acute prostatitis.
d) Acute cystitis.
e) Trauma of urethra.

15. The patient of 54 y.o. was hospitalized with fracture of the pelvis that occurs 24 hours ago. He complains of the inability to urinate, call for urination presented, pain above the pubis. Phisical examination - palpable full urinary bladder, uretrorrahia, significant hemorrhage in the perineum. The preliminary diagnosis - the injury of urethra. What first aid should be provided?
a) epicystostomy tube drainage.
b) analgesic therapy.
c) antispasmodic therapy.
d) urethral catheterization.
e) Anti-inflammatory therapy

16. The patient of 32 y.o. admitted after car accident. She complains of pain in the abdomen and above the pubis radiating to the perineum and rectum, frequent, difficult and painful urination in small portions, admixture of blood in the urine. Phisical examination determined muscular defense above the pubis, percussion - blunting of percussion sound. What is the preliminary diagnosis?
a) The kidney rupture.
b) Extraperitoneal rupture of the bladder.
c) Rupture of the urethra.
d) The rupture of ureter.
d) Contusion of the kidney.

17. The patient complains of intense pain in the left lumbar region, chill, accompanied by an increase of body temperature to 38 °C. Abdomen - mild pain in the left flank. Palpation of kidneys - painful in the left. Blood test: Leuk. - 28,0 x109 / l, blood sedimentation rate test - 63 mm / h. Analysis of urine - acid reaction, Leuk. - multiple. According to the USI - the right kidney was normal, left kidney contours are enlarged, ureter dilated. What disease you can think of?
a) tumor of the left kidney.
b) Tuberculosis of the left kidney.
c) Left-hand paranephritis.
d) polycystic kidney degeneration.

e) acute left-sided purulent pyelonephritis.

18. Patient of 42 y.o. admitted to the emergency department with a diagnosis of "Renal colic." Which of the following signs most likely for the patient?

a) leukocytosis.
b) hematuria.
c) The presence of glucose in urine.
d) bilirubinemia.
e) Reduction of red blood cells.

19. The patient of 20 years old complains of frequent urination, false calls to urinate, pain that increases during urination. Few drops of blood appears in the last portion of urine. Felt ill after overcooling. This was three times for the previous year. Body temperature is normal. Urine is cloudy, urinalysis - Leuk. - A large number, protein - 0.099 g / l. What kind of disease should we think of?

a) Acute cystitis.
b) exacerbation of chronic paracystitis.
c) tumor of the bladder.
d) Acute urethritis.
e) Chronic cystitis in the acute stage.

20. The patient was in a car accident, diagnosed with multiple anterior half-ring pelvis fractures and acute urinary retention. Enlarged bladder is palpable above the pubis. What help is indicated in this case?

a) bladder catheterization with soft catheter.
b) bouginage of urethra.
c) Administration of alfaadrenoblockers.
d) analgesics and antispasmodics.
e) intrapelvic novocaine blockade.

XI. Methodological support:

1.Methodical recommendations for students on this topic
2.Theses of the lecture on this topic
3. Set of situational tasks
4. A set of tests on the topic of options
5. Schemes and tables
6. Devices and equipment for practical work

XII. Recommended Books:

A) Basic:

1. Urology. E.M.Shimkus,S.E.Shimkus./Simferopol, IAD CSMU, 2005.
2. Radiation oncology physics: a handbook for teachers and students international atomic energy agency Viena, E.B. Podgorsak Technical Editor.
3. Medical radiology. Radiation oncology. Editors: L. W. Brady, Philadelphia H.-P. Heilmann, Hamburg M. Molls, Munich Technical basis of radiation therapy. Springer-Verlag Berlin Heidelberg 2006.
4. Tanagho Emil A., McAninch Jack W. Smith’s Geneal Urology, 17th edition, 2008.
5. Pasiechnikov S.P. Urology. Study guide for practical work for medical students, 2012.
6. Pasiechnikov, S., Saidakova, N., & Kuznetsov, V. Results of the complex systemic prophylaxis against postoperative infectious inflammatory complications in patients with benign prostatic hyperplasia. Urology. 2014.- (3), 5-11.

7. Apolikhin, O. The international epidemiological study of cross infection, urinary tract infections and genitalia male. Infekcionnyj Kontrol'. 2012.- (1), 9-10.
8. Chernenko, V., Chernenko, D., Klyus, A., & Shylo, V. Clinical efficacy of the combined therapy of patients having urolithiasis using the biologically active additions (BAD) “Prolith”. Urology. 2011.- (1), 27-32.
9. Kogan, M., Naboka, Y., Ibishev, K., Gudima, I., & Naber, K. Human Urine Is Not Sterile - Shift of Paradigm. Urologia Internationalis. 2015.
10. Sing I. Prospective randomized clinical trial comparing phytotherapy with potassium citrate in management ot minimal burden (d” 8mm) nephrolithiasis. / Sing I. – Urol Fnn . – 2011. – № 3 (2). – P. 75-81.
11. Sas D. J. Incrasing incidence of kidney stones in children evaluated in the emergency department / D. J. Sas. – Pediatr. – 2010. – №157 (1). P. 132-137.
12. Frassetro L. Treatment and hrevention of kidney stones: on update / L. Frassetro. –Am Fam Physician, 2011. – №84 (11). – P. 1234-1242.
13. Modi P, Helfand BT, McVary KT.: Modifications and surgical interventions for benign prostatic hyperplasia are potential confounders of prostate-specific antigen. //Curr Urol Rep 2010;11:224–7.
14. Roehrborn C.G., McConnel J.D.: Etiology, Pathophysiology, Epidemiology, and Natural History of Benign Prostatic Hyperplasia. Chapter 38. //Campbell's Urology 8th edition, WB Sauders, 2002.

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Навчальне видання

(англійською мовою)

Губарь Андрій Олександрович

УРОЛОГІЯ

ЗБІРНИК МЕТОДИЧНИХ РЕКОМЕНДАЦІЙ
ДЛЯ ВИКЛАДАЧІВ ДО ПРАКТИЧНИХ ЗАНЯТЬ
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ЗА ДИСЦИПЛІНОЮ «УРОЛОГІЯ»