

ODESSA NATIONAL MEDICAL UNIVERSITY
Department of Urology and Nephrology

METHODICAL WORKING of practical training for teachers
Topic 15. Acute and chronic renal insufficiency.

Academic discipline "Urology"

Level of higher education: Second (Master's)

Knowledge field: 22 "Health Care"

Specialty: 222 "Medicine"

Program of professional education: Medicine

Approved
methodological meeting on the chair
28. 08. 2023
Protocol № 1
Head. Chair prof. F.I. Kostev

Odesa 2023

1. Topic 15. Acute and chronic renal insufficiency -2 h.

2. Topicality of the theme

Topicality of students studying of this section of urology is determined by the fact that many urologic diseases of genitourinary system requires emergency care for the 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.

3. Aim of the lesson:

To learn the principals of diagnostic and therapeutic approach in urgent conditions of urinary system.

A student must know:

- main reason and clinical manifestation of urgent conditions of urogenital system.
- pathogenic mechanism 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 urogenital diseases.
- Therapeutic modes of urgent urogenital 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).
- To assess the prognosis about the recovery and restore of functions in patients with urgent urological pathology (material of lectures, textbooks).

4. Interdisciplinary integration

Urology	The most frequent symptoms of urgent urological diseases, causes, mechanisms of the correct taking of medical history, purposeful carrying out of	Identify deontological approach to the patient. State set of symptoms for a particular nosology to establish a pathological process.
---------	---	--

	objective physical examination	
	Organs	
Biochemistry	Fluctuations in the content of nitrogenous components in the plasma depending on the physiological state and pathology	
Topographic anatomy	Topography of the kidneys, ureters, bladder, urethra, scrotum organs, prostate	
Propedeutics of internal disease	Disorders of urination Disturbance of urination	Explain urinalysis. Palpate the kidneys, bladder
Next: Neurology	Osteochondrosis with secondary lumbosacral radiculitis	Perform a differential diagnosis of neurological diseases with renal colic
Therapy	Pancreatic diabetes and diabetes insipidus	Explain anuria, polyuria as urological diseases
Surgery	Clinical picture of acute surgical diseases	Perform a differential diagnosis of renal colic

5. Content of the lesson

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 symptom of renal colic and its differential diagnosis is obligatory for the doctor of any field.

Renal colic: complex symptomatic of many diseases of kidneys and upper urinary tract. This basically includes acute disorder in flow of urine from upper urinary tract on

account of their blockage (shutting, thrombosis embolism) or pressure. Often renal colic is caused by stones in kidneys and in ureters. Moving along upper urinary tracts concrement shows or causes irritation of receptor apparatus of urothelia. In the to this causes acute local spasm around concrement. On account of this develops occlusion of upper urinary tracts causing internal pelvic hypertension from this continuing admission of urine in calixo-pelvic system. Increase of internal pelvic pressure perceives baroreceptors of renal pelvis, transfers to corresponding segment of spinal cord, and also – to cores of brain, were transforms into pain.

From this rarely increases internal pelvic pressure which forms or admits as reflective spasm of renal vessels, oedema. Of renal parenchyma, which carries to increase in size of organs and tension of fibrous capsule/ which contains more number of receptors, that more or in creases the pain.

Renal colic causes sudden, appearing sharp pain, in the lumbar region. Pain causes or brings sharp character, attacking type, patient does not finds place himself.

Pains have irradiation, character which depends on location and level of obstruction. At location of concrements in region of upper and middle thirds of ureters pain irradiates in the lower part of abdomen, in the umbilical region. At the location of concrements at the level of middle-lower third of ureter pain irradiates along anterior surface of femur and in supra pubic region. At locations of stones in intramural region causes dysuria, pain irradiates in sexual organs.

Renal colic usually accompanies nausea, vomiting paries of intestine of intestine, which or that condition irritation of solar plexus and peritonium in consequence of narrow or crowded connections with around or near renal nervous plexus.

Usually positive symptom of pasternats, on pressure in osteovertebral angles are also diseased. May observe sub febriletet, characterised bradycardia, in some patients may be noticed increases arterial pressure, leucocytosis.

Characteristic for renal colic's shows appearance of erythrocytes in urine after a quite or calm attack. On the height of renal colic's urine often is usually normal. Haematuria does not causes because stone damages or destroys renal tracts, and often from this damages fornical zone of renal calyces.

For diagnosis of renal colic and putting down or knowing its reasons when subjective and objective signs are not sufficient, consumes or needs endoscopic and x-ray-radiological methods for examination.

In connection with resultative clinical estimations (card) renal colic its necessary to differentiate from (with) acute appendicitis, renal colic's, acute cholecystitis, pancreatitis, intestinal impassability (blockage), acute aonokcytis, extrauterine pregnancy, acute radiculitis.

Treatment.

For treatment of renal colic's needs or consumed is chlorethyc blockades – irrigation of skin in the region of kidneys and along the way of ureters, intravenous injection of “cocktail” (2ml 50% analgini, 1ml 1% dimedrol, 2ml no-shpa or papaverin, 1ml 0.2% platyphillin, or 5 ml baralgon intramuscular, or intravenous). Reduces the pains by warm baths, injecting narcotics.

If clinical data's indicates, that reasonable renal colic's shows such a process in lower region of ureters, then good effect may be received from blockades of seminal canal of men, and in women – infiltration's of tissue with novocaine, which are lying or laid neares supra osteoum and thickness of labium mojour, where attaches around round ligament of uterus.

In fulfilling the indicated blockages are administered 0.5% - 60-70 ml novocaine (accomplishing blockages (blockades) with lorineinstein written seperately).

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 ana impotent 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 hemorrhage from kidneys while big formless clots indicate hemorrhage from bladder).

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 microbial assoations are the most frequent causative agents of the disease. Causative agents penetrate into bile ducts by hematogenic, urinogenous and ascending 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, high temperature, 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 intra abdominal and extra abdominal traumas of bladder.

Impairment of urethra is often localized in its posterior part.

6. Questions of the II-nd level.

1. Name the main symptoms/signs 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 her species.
6. What is the difference between the acute urinary retention and the anuria?
7. Name the main etiological factors of acute pyelonephritis.
8. List the inflammatory diseases of the kidney.
9. What are the form of the purulent pyelonephritis.
10. What are the main features of acute pyelonephritis?
11. Name the classification of closed injury of the kidneys.
12. What are the clinical signs of the damage of urethra.
13. What are the methods of treatment of the out- and intra- peritoneal rupture of the bladder.
14. What is the conservative treatment of the renals injury.

6.2. Situational tasks.

Patient of 35 yrs met the doctor with the complaint of pains in the lumbar region on the left side. Pain brings attacking type character, irradiates to the lower abdomen, iliac region of left side accompanying increase of micturation, in the urine in combination of blood. Waves 2-days, during objective examination pulse 76 minute rhythmic, satisfactory arterial pressure 110/70 mm.rt.st. abdominal swelling, moderate disease. During palpation in region of

kidney (left) symptom Pasternatskogo. Positive (left) body temperature 36.8°C. in examination of precipitation of urine-leucocytes 25-25, erythrocytes 80-100.

Your diagnose to find out x-ray accordingly condition for the tasks. Medical tactics.

Patient 41 yrs. 41th years admitted with the complaint of severe attacking type of pain in the left half lumbar region, irradiating to the right femur, nausea, many timed vomitting swelling of the abdomen (flattous). During objective examination – abdomen (flattous). During in the right ribs and lumbar region.

About such diseases one may think? Such examination are necessary for production putting the diagnose? Prescribe treatment.

Lady 56 yrs met the doctor with the complaint on profused mixture of blood in the urine, similar condition first time in life. Blood in the urine appeared suddenly. Other appearences of disease unappearing or disappearing.

A week ago propholyctic check of the pathology needing (consoming) hospitalisation, or observation of disappearing. Professional work unrelated with physical work.

About which disease may go the speech which is the examination necessary to do? Point out the measures showing for the urgent help (emeruengy).

Patient 65 yrs met the doctor with the complaints of impossibility of independent (free) micturation, pain in the lower abdomen. Indicate appearing the discomfort during 12 hours.

Your diagnostic measure? Your diagnose? Medical measure?

Child 6 yrs suffering with impossibility of free micturation/ with the words of mother, since some months the child micturates with strained force, thin stream, in the last 10-12 hours micturation increasing. During checking the urinary bladder determines in middle (average) distance between umblicus and pubic. Doctors urgent or emergency service attended the catheterisation of urinary bladder.

Once catheter faces obustraction in the prostate part of the urinary canal.

Which emergent medical measures are necessary?

Which examination are necessary to hake the diagnose.

6.3. Orientation card.

GRAPHIC STRUCTURE OF THE CLASSES

<u>Renal colic</u>	<u>Acute detention of</u>	<u>Haematuria types</u>
<u>symptomatic</u>	<u>urine reasons</u>	
Pain in the lumbar region, vomiting nausea, paresis of intestines, disuria	Reflective adeonema of prostate, cancer of prostate, stone in the urinary bladder,	Painful, painless, terminal, total, starting.

tumour of urinary bladder

<u>Dianose</u>	<u>Treatment</u>	<u>Methods of examination</u>
Haematuria chromocystoscopy, absorptive urographia, excretory urography	Administration of spasmolytics, catheterisation infra pubic puncture cystostomia.	3 cup test of urine cystoscopy.
<u>Treatment</u>		<u>x-ray method</u>
Administration of spasmolytics, analgesics, novocaine blockades, warm baths, catheterisation of ureters		Cystography, infusion urography.
<u>Acute inflamatory disease. Acute pielonephritis, paranephritis.</u>		<u>Anuria</u>
Clinical, diagnostics, evidences to the operative and conservative therapy.		Types: Pre renal, renal, sub renal.
<u>Acute prostatitis</u>		<u>Diagnosis of different types of anuria.</u>
Clinicals, diagnosis, treatment evidences to surgical intervention.		_____

Standard answers for situational tasks.

Considerable clinics of disease, one may presatiaty, that to the patient has renal colic, called (appeared) stones in the ureters. For differential diagnosis its necessary to fulfill x-ray urological examination: absorbtion and excretory urography. During on take of concrement and buying (treating) painful syndrome. During absence of information of absorbtive x-ray in presence of stones, and also absence of function of left kidney shown catheterisation of ureters. Further tactics will be determined in dependence of situation.

In the given cases its necessary to emphasize acute cholestyitis, for this its necessary to examine general analysis of blood, amylase of blood, and transaminase, and also after treating pain attacks needs to contemplate absorbtion urography, with the aim of differential diagnosis in consultation chamber. Advisiable chromocystoscopy, radio renography.

In presence of information of therapy conservative, instrumental or operative treatment.

7. The situational tasks (after studying examination)

1. What is the sense of the total leukocyturia?

*1. Pyelonephritis

2. Chronic prostatitis

3. Nephroptosis

*4. Cystitis

2. What is the consequence of the examination of the patient to gross hematuria?

1) Cystoscopy;

2) Test of three glasses

3) Ultrasound

4) plain and excretory urography

5) Emergency hospitalization

Situational tasks(a-2)

1. The patient 35 years old has complaints of pain in the lumbar area, which increases during the inspiration and the expiration, increased body temperature. He is being sick for 3 days. OBJECTIVE: the kidneys in the lungs. The urine is normal. There is a slight increase of ESR in analysis of blood. Can we make the diagnosis of pyelonephritis? What are the necessary additional methods of examination?

Answer: Ultrasound, plain and excretory urography, radiography of the lung.

Test training (a-II)

1. Psoas symptom is:

1) back pain

2) bending of the trunk

*3) lack of the contour of the lumbar muscles, increased pain during the correction of the lower extremity

4) leaking of the contrast

2. The main sign of the kidney damage:

1) Symptom "burnt wood"

*2) Infiltration of the contrast outside of the kidney

3) Dilatation of the cavity system

4) Caliectasia

Professional algorithm of the examined patient

Tasks	The sequence of the	Remarks. Methods of the
-------	---------------------	-------------------------

	execution	control
Master the method of the interpretation of urinalysis	Write out normal indexes of urinalysis. Compare received urine analysis from the history of disease with the norm. Make conclusions	
Make the test of three glasses. By the shape of hematuria identify the source of bleeding	Explain to the patient how to make the test. Estimate the results	
Be able to distinguish anuria from the acute urinary	In the acute retention of urine the bladder is full. But anuria – empty	
Perform palpation of the kidneys in different positions	1. Lying on his back. 2. On the right side, on the left side 3. 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 abdominal palpation of the kidney	Pulse, blood pressure, respiratory rate. Can be palpable enlarged and painful kidney
Result of the laboratory studies	General analysis of the blood, biochemical of blood	The number of leucocytes, erythrocytes, leucoformule.ESR
The results of the additional methods	X-ray examination, ultrasound, computer	Plain and excretory urography: size, shape,

	tomogram, magnetic resonance therapy	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

Situational tasks

1. The patient 30 years old has complaints of pain in the right part of abdomen, nausea, vomiting. He began to be sick 2 hours ago. OBJECTIVE: the body temperature is – 36.5 C, the pulse is – 62, the kidneys are not palpable. Pasternatsky's symptoms 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.

Developers:

Head of Department of Urology and Nephrology, Professor F.I. Kostev,
 Professor of the Department of Urology and Nephrology Yu.M. Dekhtyar
 Professor of the Department of Urology and Nephrology M.I. Ukhal
 Associate Professor of the Department of Urology and Nephrology I.V. Rachok
 Associate Professor of the Department of Urology and Nephrology L.I. Krasiliuk
 Associate Professor of the Department of Urology and Nephrology M.V. Shostak
 Associate Professor of the Department of Urology and Nephrology R.V. Savchuk
 Assistant Professor of the Department of Urology and Nephrology S.V. Bogatskyi
 Assistant Professor of the Department of Urology and Nephrology O.M. Kvasha

Recommended literature.

Basic:

1. S.P. Pasechnikov; Urology: textbook/ Ed. S. P. Pasyechnikova, S. A. Vozianov, V. N. Lesovy [and others]. - View. 3rd – Vinnytsia: New Book, 2019.
2. Pasechnikov S.P. Modern problems of urology: [manual]: doctor's guide/ S.P. Pasechnikov, V.I. Zaitsev. - Kyiv: L-ry Health of Ukraine; 2017.
3. Stus V.P. Urology (practical skills for intern doctors) / V.P. Stus, S.P. Pasechnikov. Teaching and methodical manual. - Dnipropetrovsk: Akcent PP LLC, 2016.

4. Sarychev L.P. Symptoms of urological diseases: method. rec. For teachers / L. P. Sarychev, S. M. Suprunenko, S. A. Sukhomlyn, Ya. V. Sarychev. – Poltava, 2019.
5. O.V., Lyulko, O.F. Voizianov Textbook "Urology" 3rd edition. Thresholds Dnipropetrovsk. - 2012 p.
6. "Urology (Methodical development of practical classes for students)" edited by Professor V.P. Stus, second edition, supplemented. / A.P. Stus, Moiseenko M.M., Fridberg A.M., Pollion M.Yu., Barannik K.S., Suvaryan A.L., Krasnov V.M., Kryzhanivskiy O.Yu. - Dnipro: Accent LLC. - 2018. - 336c.
7. Urology: textbook for students. higher med. academic established: translation from Ukrainian publications / S.P. Pasechnikov, S.A. Voizianov, V.N. Lesovoy, F.I. Kostev, V.P. Stus, et al./ Ed. S.P. Pasechnikov - Edition 2. - Vinnytsia: Novaya Knyga, 2015. - 456 p.: illustr.
8. Urology: textbook for students of higher medical education Institutions /S.P. Pasechnikov, S.O. Voizianov, V.M. Lesovoy (et at.); ed. by Pasechnikov. / S.P. Pasechnikov, S.O. Voizianov, V.M. Lesovoy (et at.) - Vinnytsia: Nova Knyha, 2016. - 400 p.
9. EAU Guidelines, edition presented at the 28th EAU Annual Congress, Milan 2021. ISBN 978-90-79754-71-7. EAU Guidelines Office, Arnhem, The Netherlands.
10. Alan W. Partin, Alan J. Wein, et. all - Campbell Walsh Wein Urology, E-Book (12th ed.) – 2020.
11. Omar M. Aboumarzouk - Blandy's Urology, 3rd Edition – 2019.
12. David Thurtle, Suzanne Biers, Michal Sut, James Armitage. - Emergencies in Urology – 2017. 4. Philipp Dahm, Roger Dmochowski - Evidence-based Urology, 2nd Edition – 2018.

Additional:

1. Boyko M.I., Pasechnikov S.P., Stus V.P. and others Clinical andrology // Doctor's guide "Androlog". - K.: LLC "Library "Health of Ukraine", 2013. - 222 p.
2. Sarychev L.P. Clinical anatomy and physiology of organs of the urinary and male reproductive system: method. rec. for teachers / comp. L. P. Sarychev, S. A. Sukhomlyn, S. M. Suprunenko. – Poltava, 2019. – 11 p.
3. Sarychev L.P. Symptoms of urological diseases: method. rec. for teachers / L. P. Sarychev, S. M. Suprunenko, S. A. Sukhomlyn, Ya. V. Sarychev. – Poltava, 2019. – 14 p.
4. Medical student's library. Urology. Edited by F.I. Kosteva. - Odesa, 2004. – 296p.
5. Atlas-guide to urology. Ed. A.F. Voizianova, A.V. Lulko Dnipropetrovsk, 2002.-T. 1,2,3
6. Urology / Ed. Prof. O.S. Fedoruk - Chernivtsi: Bukovyna State Medical University, 2011. - 344p.

Information resources:

University website <https://onmedu.edu.ua>

Library library.odmu.edu.ua

1. <https://uroweb.org/>

2. <https://www.nccn.org/>

3. <https://www.auanet.org>

4. <https://www.inurol.kiev.ua/>

5. <https://www.souu.org.ua/>

