

ODESSA NATIONAL MEDICAL UNIVERSITY  
Department of Urology and Nephrology

METHODS WORKING of practical training for teachers

Topic 1. Symptoms of urological diseases. Peculiarities of the structure of diseases of the genitourinary system in Odesa region.

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  
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Protocol № 1  
Head. Chair prof. F.I. Kostev

Odesa 2023

Topic 1. Symptoms of urological diseases. Peculiarities of the structure of diseases of the genitourinary system in Odesa region - 2 hours

**Actuality of the theme**

Actuality of this section of urology is defined by the fact, that many diseases of urinary system and male genital system have characteristic manifestations; all mentioned give peculiar features to symptom complex of urologic diseases. Symptoms of urologic diseases may be general and local ones. General symptoms develop due to reaction of the whole organism to the impact of pathologic causative agent, local ones depend on localization and character of lesion. It is local manifestations that give peculiarities to urologic diseases.

**Education aims.**

To learn the most often symptoms developing in case of renal diseases, urinary ways and male genital organs (pains, disorders of urination, quantitative and qualitative changes in urine, pathologic discharges from urethra), to master causes and mechanisms of their development to correctly take case-history, purposeful carrying out objective study and interpreting analysis of urine.

*Student must know (a=III).*

- Defining and clinical meaning of symptoms of urologic diseases.
- Differences of symptoms of acute urine retention, anuria, hematuria and uretrography. Types of hematuria depending on bleeding source.
- Diagnostic meaning of qualitative and quantitative changes in urine.
- Mechanism of development of pre-renal, renal and post-renal anuria.

*Student must be able to (a=III).*

- define renal colic and be able to differentiate it with acute surgical diseases of abdominal cavity organs (patients, materials of lectures, textbooks).
- explain clinical meaning of symptoms of urologic diseases in graphologic structure of a lesson (materials of lectures, textbooks).
- analyze difference of symptoms of acute urine retention and anuria, hematuria and uretrorrhagia (patients, materials of lectures, textbooks, samples of analyses).
- analyze general analysis of urine (samples of analyses).
- classify disorders of urination (materials of lectures, textbooks, patients).

***Practical skills to be mastered at practical class***

Palpation of the urethra and scrotal organs

Palpation of the prostate gland

**Interdisciplinary integration**

<b>Discipline</b>	<b>To know</b>	<b>To be able to</b>
Human anatomy	Nephron as a structural unit of kidney	To be oriented in anatomical terminology
Topographic anatomy	Topography of kidneys, urinary bladder, ureters, prostate gland, scrotal organs	
Normal physiology	Physiology of urine formation	

Biological chemistry	Ranging of content of nitrous component in the blood plasma; particles of urinary sediments in dependence on physiologic state of organism and pathology, pathologic components of urine, pyuria, chyluria, hematuria, pneumaturia, hemoglobinuria	
Introduction in internal diseases	Disorders of urination, frequent urination, oliguria, anuria, nocturia, bacteriuria, pollakisuria	To interpret general analysis of urine. To palpate kidneys, urinary bladder
Neurology	Osteochondrosis with secondary radiculitis	To make differential diagnostics of neurologic diseases against renal colic
Therapy	Diabetes mellitus and diabetes insipidus, nephrogenic, psychogenic diabetes	To interpret polyuria, anuria as urologic pathology, excluding therapeutic diseases
Nephrology	Nephrologic diseases. Acute and chronic glomerulonephritis	To differentiate true and false proteinuria
Surgery	Clinical picture of acute surgical states («acute abdomen»)	To make differential diagnostics against renal colic

### Interdisciplinary integration

Urology	To learn the most often symptoms of kidney diseases, of urinary ways and male genital organs(pain, disorders of urination, quantitative and qualitative changes in urine, (pathologic discharge from urethra), to know causes and mechanisms of their development for correct taking case-history, purposeful carrying out of objective examination, interpreting of analysis of urine	To find out deontologic approach to patient, to carry out “three-glass” test. To establish localization of pathologic process to define complex of symptoms for every pathology
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**Structural-logical scheme of content**  
Clinical structure of symptoms of urologic patients

Educational elements		
1-st order	2-nd order	3-d order
Pain in the area of urogenital organs	Renal colic Pain in urinary bladder diseases Pain in prostate gland area Pain in the ureter area	Symptoms Causes Differential diagnosis Treatment measures
Disorders of urination	Pollakisuria Stenanguria Enuresis Acute urinary retention Involuntary urination Incontinence of urine	Daily Nocturnal Constant Neuro-reflector one

	Chronic urinary retention	Of mechanic character True False Paradoxical ischuria
Qualitative changes of urine	Polyuria Oliguria Anuria	Arenal Prerenal Postrenal Renal
Quantitative changes of urine	Proteinuria Color and transparency of urine Pyuria Hyperstenuria Hypostenuria Isohypostenuria Hematuria Hemoglobinuria Chyluria Pneumaturia Bacteriuria	True False Defining of latent pyuria Active leukocytes Two-glass test Initial Terminal Total
Pathologic discharges from urethra	Purulent Urethrorrhagia Spermatorrhea Prostatorrhea	

**Link with other disciplines.**

Symptoms which are observed in urologic patients may be leading in case of neurologic, therapeutic, surgical, gynecologic and other diseases.

Pain in the lumbar area, which occurs in neurologic patients, suffering from osteochondrosis with secondary lumbar-sacral radiculitis, very often is considered as pain of renal origin, due to this patients take different medicamental agents. From the other side, pain in case of renal diseases stimulate different radiculopathies, due to this fact urologic patients receive treatment caused by radiculitis for a long period of time while renal diseases progresses. Severe radiculalgias are observed in case of metastasis of renal cancer or prostate gland cancer into pelvic and lumbar bones Every patient followed up by neurologist because of un-established etiology of sacroileitis, radiculitis must be examined by urologist to exclude urologic pathology. Therewith, important significance is given to palpation of kidneys, prostate gland, interpreting of general analysis of urine. In presence of pathologic changes in urine, patient is administered complex urologic examination, which will allow to clear up true cause of pain It is necessary to know, that multiple disorders of urination, even paradoxical ischuria may be caused by

dysfunction of urinary bladder, linked with acquired, congenital diseases or traumas of spinal cord. Micro- or macrohematuria is by no means always a symptom of urologic disease. Zone may develop in case of fibrinolysis disorder. Vitamin C or K deficiency may also lead to appearance of blood in urine. Cardiac diseases with embolisation of renal vessels and renal infarction as well as anti-coagulant usage and nephrotoxic medicines may be the cause of the latter. Besides, hematuria develops in case of nephritis of various genesis among which post-streptococcal glomerulonephritis occurs the most often. From this follows, that task of a therapist is to exclude extra- urinary sources before referring patient with hematuria to urologist. In interpreting polyuria it is necessary to exclude diabetes mellitus as well as diabetes insipidus (hypophyseal, nephrogenic, psychogenic). Clearing up etiology of different types of anuria is necessary in urgent order. In practice of therapist, anuria (oliguria) may develop in case of embolism of both renal arteries or in case of thrombosis of renal veins, as well as in pathologic process of a single kidney.

The most often the cause of pathologic proteinuria (more than 150 mg of protein in daily urine) is not urologic but nephrologic diseases. Acute and chronic glomerulonephritis belongs to them. More often it is necessary to make differential diagnosis of a right-side renal colic against acute appendicitis. To give correct medical care, renal colic must be differentiated from such surgical diseases as, acute pancreatitis, perforating gastric or duodenal ulcer, acute cholecystitis, intestinal obstruction.

In case of false interpreting of pain two mistakes may happen: a) renal colic is considered as an acute surgical disease of abdominal organs and patient is subjected to unjustified surgical intervention; this is not always favorable for disease prognosis, b) acute surgical disease is considered and treated as renal colic; this leads to peritonitis development. Correctly taken case-history, taking into account pain character, peculiarity of its development, irradiation, data of objective and laboratory study allow in the majority of cases to correctly reveal cause of the disease.

Surgeons often must follow up patients with acute renal incontinence, especially in post-operative period, when it has reflector character most often. Knowledge of consequence of treatment manipulations in various causes of a given symptom is obligatory for a surgeon.

Disorders of urination (pollakisuria, etc.) are often symptoms of diseases of female genital organs. Orienting in changes of urine (visually and by the laboratory study data), it is possible to differentiate disorders of urination and pains in the lower abdomen, which are caused by the diseases of female genital organs, from urologic ones.

In case of pregnancy pathology (nephropathy, eclampsia) quantitative and qualitative changes of urine appear; their correct interpreting gives possibility to timely differ these pathologic changes.

### CONTENT OF THEME OF THE LESSON

Symptoms of urologic diseases may be general and local ones. General symptoms appear due to reaction of the whole organism to impact of pathologic causative agent; local ones depend on localization and character of lesion. It is local manifestations that give peculiarities to urologic diseases. Patients, who complain of discharge from urethra and disorders of sexual function (couplative and reproductive) present peculiar group.

**Renal colic is one of the most often symptom of urologic diseases. Patients with renal colic seek doctor's advice from general practitioner (local physician, surgeon, doctor of emergency aid rendering) who must be sure in exactness of diagnosis before treating attack. From this follows, that knowledge of symptoms of renal colic, its differential diagnostics is obligatory for a doctor of any profile. Each patient who had renal colic must be examined by urologist with the purpose to establish its cause and diagnosis.** In case of independent study, among disorders of urination **acute retention of urine** should be paid attention to. Doctor must establish its cause, to give correct medical care. Now, taking into account nosocomial infection, catheterization of urinary bladder must be considered very accurately. From the point of view of prevention of urinary ways infection, while giving medical care and in the absence of effect of conservative measures, supra-pubic puncture of urinary bladder is more rational; after this, patients must be referred to urologist.

While establishing amount of **residual urine** it is necessary to use non-invasive methods (USI, X-ray, radio-isotopic) more widely than catheterization of urinary bladder.

**Involuntary urination and incontinence of urine** are the symptoms with different mechanisms

of development. Their clinical evaluation gives possibility to suspect a series of diseases, which are localized in the area of urinary bladder cervix, as well as defects of development of urinary genital system organs.

**Quantitative changes of urine** (polyuria, oliguria, anuria) as well as changes of their density in urologic patients testify to disorders of kidney function (chronic or acute renal insufficiency). While giving medical aid to a patient with anuria, first of all it is necessary to define its form (arenal, prerenal, renal, postrenal). In other case treatment will be not correct.

In presence of expressed **proteinuria**, especially in normal or not sharp elevation of content of corpuscular elements in urine (leukocytes and erythrocytes), first of all examination of a patient should be directed at revealing or excluding of glomerulonephritis.

**Pyuria and bacteriuria** - signs of inflammatory process of urogenital system in males and of urinary system in females. Analysis of urine allows not only to suspect or reveal inflammatory process (pyelitis, pyelonephritis, cystitis, urethritis, prostatitis, vesiculitis, and others), but to control treatment process.

**Hematuria** also may be a sign of inflammatory process, however it, first of all, must be considered as a sign of destructive process (lesion of mucous membrane with calculus, tumor). In such a case every process, which caused macrohematuria may cause microhematuria as well. In spite of hematuria expressiveness, clinician must examine patient. Interpreting of initial, total and terminal hematuria plays role of starting point for the further examination of patient to establish diagnosis.

**Macrohematuria** in adults in the absence of other symptoms most often is a sign of cystic cancer. Macrohematuria and feeling of discomfort on palpation of tumor in the lumbar area must direct examination of patient for searching of renal tumor.

Students independently examine patients in hospital, main attention must be paid to anamnesis, disease development, presence of allergic diseases in the past, hereditary anamnesis, presence of diseases of other organs and systems, differentiate against other similar diseases, make plan of additional methods of examination.

### Questions of II level.

1. Name signs of renal colic.
2. What does acute retention of urine mean?
3. Causes of pre-renal anuria.
4. Causes of renal form of anuria.
5. Hematuria, its types in dependence with localization of bleeding source.
6. Paradoxical ischuria, its pathogenesis.
7. What is the difference between hematuria and urethrorrhagia?
8. Bacteriuria, its types.
9. Urine incontinence, its types.
10. What is the difference between anuria and acute urinary retention?

### Tests (a =11)

1. What does total leukocyturia testify to?  
\*1) Pyelonephritis  
2) Chronic prostatitis  
3) Acute pyelonephritis  
\*4) Cystitis
2. Anterior surface of kidney contacts with  
\* 1) liver;  
2) cecum;  
\* 3) ascending portion of colon;  
\* 4) descending portion of duodenum;  
5) mesenterium of transverse colon.
3. What is the succession of action while examining patient with macrohematuria?:

1. cystoscopy;
2. “three-glass” test;
3. ultrasonic investigation;
4. plain and excretory urography;
5. emergent hospitalization to in-patient department.

\* 1. 5.2.3.1.4.

2. 5.2.3.4.1

3. 2.3.4.5.1

4. 2.4.5.1.3.

5. 3.4.5.2.1

4. To control renal colic the following medicines are used:

a) baralginum,

б) no-spa in the dose: 1-2ml 3 times daily i/m, 2,5ml 2 times daily:

a-2, b-1 a- 1,6 - 2

5. Place methods of defining residual urine as invasiveness growths:

1) roentgenologic;

2) USI;

3) radio-isotope;

4) catheterization of urinary bladder:

2, 3, 1, 4

3, 1, 4, 3

1, 2, 3, 4

4, 3, 1, 2

1, 3, 4, 2

#### **Situation tasks (a = II)**

1. Mother complains of that her 5-year-old child during sleep develops urination. On examination: in general analysis of urine no pathologic changes in urine were revealed. What disease is it?

Answer: this disease is called enuresis. More often it develops in boys.

2. In patient 23 years- of- age urine has a noticeable opacity due to admixture of leukocytes and bacteria, but localization of inflammatory process is unknown. What accessible method of investigation should be used?

Answer: method of investigation - “two-glass” test (in the first glass - initial leukocyturia - inflammatory process is in urethra; in the second - total leukocyturia - inflammatory process may be localized in any portion of urogenital system.

3. Male patient, aged 74 years. During 2 years period has been observing difficult urination, therewith it was necessary to tense, flabby flow of urine, which interrupted often. On admission to the hospital - urine incontinence, constant bursting open pain over the pubis, with protrusion, upper edge of protrusion contours is at the umbilical level. On percussion: dullness in this area was noted. During some days constantly, without control - dribbled urination. What disorder of urination does this patient have?

Answer: paradoxical ischuria.

**Professional algorithm of examination of a patient.**

Tasks	Succession of actions	Notes, means of control.
1. To master method of interpreting general analysis of urine	<ol style="list-style-type: none"> <li>1 .To write down data of general analysis of urine within the norm</li> <li>2 .To compare analysis from casehistory with normal ones.</li> <li>3 . To draw conclusions.</li> </ol>	
2. Carrying out of “three-glass” test - by forms of macrohematuria to define source of bleeding	<ol style="list-style-type: none"> <li>1. To explain to a patient how is test performed.</li> <li>2. To assess obtained results</li> </ol>	
3. To master procedures of defining residual urine and to be able to use them	<ol style="list-style-type: none"> <li>1. USI</li> <li>2. Radiologic</li> <li>3. Roentgenologic</li> <li>4. Urinary bladder catheterization</li> </ol>	
4. To be able to distinguish anuria from acute urine retention (AUR)	<ol style="list-style-type: none"> <li>1. In case of AUR bladder is overfilled.</li> <li>2. In case of anuria it is empty.</li> </ol>	
5. To perform palpation of kidneys in different positions	<ol style="list-style-type: none"> <li>1. In patient’s supine position</li> <li>2. On the right side, left side</li> <li>3. In standing position</li> </ol>	To pay attention to sizes, form, mobility, tenderness

6. To master percussion of urinary bladder		
7. To master skills of defining Pasternatsky’s symptom	<ol style="list-style-type: none"> <li>1. It is performed in patient’s lying in bed from healthy side</li> <li>2. To slightly percuss along the 12-th rib</li> <li>3. In appearance of pain, symptom is believed as positive</li> </ol>	



8. Writing case-history	<ol style="list-style-type: none"> <li>1. Complaints.</li> <li>2. Case history</li> <li>3. Past history</li> <li>4. Objective status</li> <li>5. Initial diagnosis</li> <li>6. Administering of additional investigations</li> <li>7. Carrying out of differential diagnostics</li> </ol>	
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### Situation tasks of III level

1. Patient, aged 32 years, complains of acute pain in the right side of the abdomen, nausea, vomiting. Fell ill 2 hours ago. Delivered to reception ward by ambulance. Objectively: temperature - 36,9°C, pulse - 62 beats per hour. Right portion of abdomen lags behind in act of respiration. Pasternatsky's symptom is positive in the right. On palpation of the abdomen local tenderness is noted in the right iliac area. Peritoneal symptoms are absent. Frequent urination by small portions.

What disease may be considered, why? What additional examinations are necessary to perform to establish diagnosis?

Answer: In this case is impossible to exclude appendicitis or renal colic without additional methods of investigation. That is why it is obligatory to administer general blood analysis, analysis of urine, to do USI of kidneys, urinary bladder.

2. Female patient, 23 years old, married 6 weeks ago. Before marriage did not have sexual relations. Complains of frequent imperative urge to void urine. Fell ill 4 days ago. Before this urination was 4-5 times a day, but from the moment of illness- frequent urination and in two days it became followed by pain. The urge to void urine was present, but quantity of urine was too small. Today in the morning patient noted a small amount of blood on the toilet paper after urination. Patient does not remember if urinary bladder is emptied after sexual contacts.

Objectively: sharp tenderness on deep palpation in the sub-pubic area. No signs of enlargement of urinary bladder on percussion. Analysis of urine: dark yellow color, pH- 6,0, density - 1029, erythrocytes - 60 - 80, leukocytes - 40 - 50 in a big field of vision.

What diagnosis may be established on the basis of these symptoms?

What are the means of its prophylaxis in this given case? Carry out differential diagnostics with urinary bladder cancer.

Answer: The most likely this patient is ill with cystitis. Its prophylaxis is urination after sexual contact. But presence of blood in urine causes the necessity to carry out differential diagnostics against cystic cancer.



## Oriented card for independent work of students with literature

Tasks	Directions	Answer
To learn:	To name causes of anuria acute urinary incontinence, hematuria, polyuria, renal colic.	
Etiology		
Clinical manifestations	To make classification of incontinence of Urine	
Diagnostics	To name basic signs of hematuria, renal colic, urinary incontinence, acute urinary retention. To make scheme of differential diagnostics of renal colic with acute surgical diseases of abdomen, such as acute appendicitis, acute pancreatitis acute cholecystitis perforating duodenal or gastric ulcer.	
Treatment	To make treatment scheme of - renal colic - acute urine retention - prerenal anuria form - postrenal anuria form - hematuria - paradoxical ischuria	

### Developers:

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### 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. Vozianov 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. Vozianov, 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. Vozianov, V.M. Lesovoy (et at.); ed. by Pasechnikov. / S.P. Pasechnikov, S.O. Vozianov, 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. Vozianova, 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](http://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/>



