

ODESSA NATIONAL MEDICAL UNIVERSITY

Department of urology and nephrology

GUIDELINES
of independent work of students

Academic discipline “Urology”

The theme of independent work of students: Nephrogenic arterial hypertension

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

The theme of independent work of students: Nephrogenic arterial hypertension – 1 h/

Aim of the lesson:

GENERAL AIM: to teach the students to diagnose the patients having probable renal genesis of hypertension, principles of its diagnosis and its treatment.

STUDENT MUST KNOW:

1. The mechanism of the growth of nephrogenic hypertension in vasorenal parenchymatous and its mixed forms.
2. The role of sodium balance in pathogenesis of vasorenal hypertension.
3. Congenital and acquired causes of nephrogenic hypertension.
4. The peculiarities in the clinical flow of the vasorenal and parenchymatous form of nephrogenic hypertension.
5. The diagnosis of the disease (laboratory, x-ray and instrumental)
6. The methods of treatment of different forms of nephrogenic hypertension.

THE STUDENT MUST KNOW :

1. To make the plan of investigations of the patients suspected with nephrogenic hypertension.
2. To do the auscultation in the region of projection of renal arteries to distinguish pathological murmurs.
3. To check the arterial pressure in different positions of the patient (reclined, standing and after physical stress)
4. To distinguish the changes in urogram specific for nephrogenic hypertension.
5. To determine the causes of nephrogenic hypertension according to the changes in renal vessels.

For achieving the desired task it is required to remember from the course of histology -the blood supply of the kidney, the peculiarities of the blood supply of juxtaglomerular apparatus, the normal physiology -the functions of the kidney in maintaining the tonus of arterial system, pathophysiology -the basic process in the kidney taking place during the most spread out diseases of the kidneys (pyelonephritis, nephrolithiasis, hydronephrosis).

The patient with nephrogenic hypertension is at first observed by the physician after revealing the rise in blood pressure. The knowledge of clinical peculiarities in the flow of nephrogenic hypertension will allow to carry out the necessary diagnostic measures.

The basics of the lesson:

Renovascular hypertension may arise due to:

1. Fibromuscular hyperplasia
2. Stenosis (congenital and acquired) of the renal artery
3. Renal venous hypertension caused by intercrossing of the vein or by decompression of the vein with the scars the causes of the parenchymatous hypertension may be the disturbance in renal vascularisation, its ischemia caused by sclerosis.
4. To be able to diagnose and render help to patients with bacteriotoxic shock

5.To arrest the attack of renal colic , to carry out the blockade according to lorrin epstein chlorthyl blockade

To acquire the desired task it is imp to remember from the course of anatomy,the location and structure of organs of urogenital system, from the course of physiology, function of the kidney, urinary bladder, genital organs, from the course of pathophysiology,the acute renal failure,the relations of renal nervous plexus with other plexus ,from the course of pathological anatomy,the morphological changes in acute inflammatory disease of the organs of urogenital system , in acute renal failure,from the course of operative surgery, the technique of suprapubic puncture ,cutting the abscess of prostateglands, nephrostomy, nephroectomy, from the course of pharmacology, antibacterial drugs , diuretics , hormonal drugs and others.

The relation between the different disciplines.

The knowledge acquired by students while studying urgent urological pathology and trauma of the urogenital system is necessary for them in their work not only as a urologist but also as a physician , surgeon , gynecologist and traumatologist.

The renal coli may have similar clinical picture with such surgical disease like appendicitis , acute pancreatitis , colon obstruction and also with gynecological disorders.

The correct collection of anamnesis , dysuria, the character of pain, the changes in urine, the details of chromocystoscopy and x-ray test enable to differentiate the given condition.

The point of contact with nephrology arises with the presence of haematuria, when its required to carry out the differential diagnosis with glomerulonephritis , nephrotic syndrome and with other systemic affect of the kidney.

The acute withhold of urine passage may be caused by the urological disorders(adenoma of the prostate glands, sclerosis of the prostate glands , structure of the ureter, the urinary bladder stones, tumour of the urinary bladder,cancer of prostate glands) and also by reflectory after myocardial infarction ,insult operation on the organs of the thoracic and abdominal cavity ,gynaecological and obstretical manipulations carrying out the rectal endoscopic and x ray tests enables us to determine the causes of acute withhold of urine passage.

The acute inflammatory renal disease has to be diferentiated with the gen inf disease such as pneumonia, acute cholecystitis and appendicits . It is often required to distinguish acute prostatitis from paraproctitis

The correct attention of anamnesis , urine test , carrying out the special methods of tests enables to make the correct diagnosis

NEPHROGENIC HYPERTENTION

For achievement of subject one should remember from course of histology. Blood circulation of kidneys, speciality of extramedullary blood circulation; normal physiology role of functions of kidneys in maintaining or holding tone of arterial systems, pathological physiology – basic processes of kidneys, coming in during the most spreading urological diseases (pielonephritis, nephrolitias, hydronephrose).

Relation (connection) with other disciplines; patient with nephrogenic hypertony at the beginning. As a rule, observes theurapist after which, as to them appears increase of number of

arterial pressure. Sense (knowledge) of clinical specialties duration of nephrogenic hypertony allows (permits) well timed (time based) implement necessary (necessities) for diagnostic measures.

Basic position on class.

Nephrogenic hypertony may be renovascular, parenchymatous and mixed (compound).

Renovascular hypertony may cause in consequence.

- a) Fibromuscular hyperplasy.
- b) Stenosis (congenital or acquisition) renal artery.
- c) Venous renal hypertension, called out renal vein (nephroptosis) or with pressure of vein scars with pulls (drawing towards).

Reasonable parenchymatous hypertony may be disturbance of vascularisation of kidney, ischemia of its, called out sclerotism. Processes in results of chronic pielonephritis during wrinkling of kidneys.

Mixed type of nephrogenic hypertony causes during in combination of two high indicated variants (variations).

Symptomatology depends from character of changes. Party appearances (happens) occurs as dull pain in the lumbar region, increase of diastolic pressure. Along with these may have place of characterised clinical appearances of basic or know diseases, service of records of jerks to the cause of nephrogenic hypertony (nephrolitias, tumour of kidney, trauma).

Diagnosis of disease pile up (put together) from calculation of given anamnesis (pielonephritis, nephroptosis, trauma of lumbar region in the anamnesis).

- a) Given laboratory examinations at moment of observation or early conduction's (prolong leukocyturia, mickohaematuria, albuminuria, isohypostenuria, bacteriuria, results of provocational test and pharmacochromocystoscopy).
- b) Uro x-ray observation (changes of forms and size of kidney. Deformation of calxyo pelvis system, characterised for wrinkled kidneys, mixing of kidneys during polypositional unography).
- c) Vacographic signs (stenosis with post-stenotic broadening (expansion), symptom burning tree, presence (availability) of less vessels or without vessels zone)
- d) On phlebogramme of kidney varicose broadening of internal organal renal vein, referring about venous renal hypertension.

Treatment of nephrogenic hypertony, because of chronic pyelonephritis, concludes in treating pyelonephritis. In presence or avacability of wrinkled kidneys or parts of kidney with cause or appearance of wrinkled-nephrectomy or resection of kidneys accordingly.

During renovascular hypertony – plastic operations on vessels of kidneys (anastomosis of artery end to end, transfer or renal artery in the aorta, demucosation of renal artery, splenorenal anastomosis).

Card of anamnesis of the patient.

Complaints and anamnesis:

Explanation of subjective occurrence of increasing arterial pressure during nephrogenic arterial hypertony (head ache, often localised in the frontal region).

Keen attention of uncorresponding (unconformable) peaks of arterial pressure and age of the patient, and also on expressed increase of diastolic arterial pressure during neohertony. Trace back the relation of arterial hypertony with diseases of kidney in anamnesis (disease of kidney at childhood, prolonged leucocyturia, congenital anomaly development). Conduction of treatment and its affectivity.

Inspection of patient:

Outer appearance, colour of skin, determination of arterial pressure and different positions of body of patient and after physical stress (ortostatic hypertony).

Keep keen attention on broadening of borders of heart, deafness of tones, accent of second tone in the aorta. Palpation of kidney at position of patient while standing, lying on spine and at side wise or angled. Auscultation of stomach in right and left upper quadrants and back wall of thorax cage for determination of systolic noise, characterised for stenosis of renal artery.

Inspection of x-rays films

On absorption x-ray urinary systems exposure of shadows of x-ray contrast concretions in projection of urinary tract, along possibility of contours of kidneys (decrease in size of kidneys).

In excretory urogramme grading of well timed. Excretion of x-ray contrast material of kidneys, possible of retention of excretion of its on sides of damage. Availability or presence of deformation of pelvic calyces systems, characterised for wrinkled kidneys, decrease in size of pelvic calyces systems, broadening of calix, changes in normal configuration of some calyces.

On the angiogramme one may determine or determines in the renal arteries stenosis of parts with characterised poststenosis broadening availability or presence of aneurism, symptom of burning tree. In the nephrographic phase specify the contours of kidney, presence of their parts stenosis nephrographic effect diffused or localised, witnessing about stenosis of vascularisation of these parts. Their ischemias.

In phenomenon of valsalva determines stage of mixing of kidneys and pulling (surface tension) of vascular limbs of kidneys. On the phlebogramme about venous renal hypertension.

Determine method of treatment with the calculation of given data's.

Conservative treatment of chronic pielonephritis, when reasons of nephrogenic hypertony shows chronic pielonephrit, prolonged, type of (treatment with medicines), consuming in every concrete cases.

Operative (surgical) treatment (nephrectomy, resection of kidney), reconstructive method (way) on vessels (resection of changed) parts, roundabout (turning) of vascular anastomosis. Splenorenal vascular anastomosis, nephroptosis for restoring disturbance of venous flow.

Situational tasks.

Patient 18 yrs admitted in the clinic with complaint of head aches, fatiguability (tiredness) partly hypertonic crisis. Arterial pressure, at first measured 4 years ago rendering (show) higher – 180/100 – 200/110 mm.rt.st. From that time and till the time of admission in the clinic not short unsuccessfully carried out (went on) the course of conservative treatment. Conduction or carrying out of divided (different) examinations of functions of kidneys on excretion of ions of sodium (test govarda). For 30 minutes period collection of urine from right kidney was excreted a 35 ml – equivalent/liter, left 0-2 ml equivalent/liter.

Which signs witnesses about presence of nephrogenic hypertony, which examination show (evidences) for its (establishment) or confirmation.

Patient 13 yrs. complaining about head aches, often repeated hypertonic crisis, sharp decrease (fall) in sharpness of vision.

Patient during a period of one year. Continued or carried out hypotensive therapy with consuming ganglioblockater rendering (showing) no effect. Pulse on right radial artery to beats in a minute. Satisfactory inflation under projection of peritoneal aorta above umbilicus systolic noise. Arterial pressure of brachial artery with the right side 210/140, left 170/140 mm.rt.st.

About which character of hypertension suppose to think on basis of clinical data's? Which evidences (shown) extra methods for examination?

Patient of 30 yrs admitted at the clinic with complaints of increased arterial pressure till 190/160 mm.rt.st. Patient himself notes nearly about an year after the injury in the lumbar region. In duration of this time unsuccessfully was treated at the therapeutic dispensary. Pulse 80 beats in a minute, rhythmic tensed. Tones of the heart dull (deaf). Accent of second tone at aorta. Kidneys do not palpate symptom Pasternatskovo negative, no disuria.

Timely microhaematuria.

About which diagnose suppose to think? Mark out or show the plan of examination or investigation.

Patient 40 yrs feels dull pain in the lumbar region on the right side, head ache, increased arterial pressure till 180/110 mm.rt.st. suffered for 5 yrs. Not timely (untimed) not oftenly was admitted or laid up at urological dispensaries (hospital) on account of chronic pielone phritis. One year later durina the investigation was diagnosed with wrinkled right kidney. In a duration of an year she realised (felt) increased arterial pressure, on account of which she was admitted in to the clinic. Pulse 84 beats in one minute. Tones of the heart are deaf type (muffled). Absdomen soft. Kidneys do not palpate symptom Pasteratskovo negative. No disuria. Timely microhaematuria.

On the absortion films (x-rays) urinary systems shadows of the kidneys are not determined. Shadows of concrement in the protections of urinary tracts are not appearing. On the urogramme are realised (seen) decreased sizes of right kidney in comparison with the left. Deformation of pelvis-calyces system of right kidney (broadening of calix, unequal contours of their).

What is Your diagnose? Indicate (show) further methods of examinations.

Patient of 40 years. Feels (realizes) dull pain in the lumbar region increased arterial pressure till 180/110 mm.rt.st. patient 6 years. Normal body constitution, decreased apeteite. Absdomen soft kidneys do not palpate. Symptom Pasternakovo negative. No disuria. On the absortion x-ray films urinary system shadows concrements are not seen (no appearance) on the urogramme realizes slow excretion of contrast substance (material) of right kidney. Passage of contrast material along (through) ureters is not disturbed.

On the aortgramme realizes stenosis of right renal artery along with its fusion (falling) or entrance in the aorta. Analogic card on (of) selective right side artriogramme of kidney. Which is the reason of arterial hypertony. Your medical measure.

Task for selfinspection of knowledge for students

Classification of nephrogenic hypertony.

Vasorenal _____ mixed.

Eitiologic factors of vasorenal forms. Stenosis of renal arteries_____ aneurism of renal arteries.

Pathogenetic factors of nephrogenic hypertony. Workout of renin during inchemia _____ disturbance in sodium balance.

Clinical signs of vasorenal hypertony. High diastolic pressure orthostatic hypertony.

Systolic noise in the _____ partly (often) retinopathy. Epigasteric region.

Basic methods of diagnosis in damages of renal arteries.

The most often reason of parenchymatous forms of nephrogenic hypertony.

Text objects _____ I. Nephrogenic hypertony.

Text elements

I order

II order

III order

- Ateosclerosis of renal arteries.
- Fibromuscular displasy of renal arteries.
- Pull (tensed) or stretched renal arteries in nephroptosis

Eitiology of vaso-renal - Thrombosis and emboly, of

forms	renal arteries.	
	- Aneurism of renal arteries.	
	- Chronic pielonephritis.	
	- Tuberculosis of kidney.	
Eitiologic factors of parenchymatous forms.	- Polykistosis of kidney.	
	- Hydronephrosis.	
	- Tumour and cyst of kidney.	
	- Glomernephritis.	
	- Work out of renin in conditions of inchemia.	
Pathogennesis	- Formation of angiotensin.	
	- Disturbance of sodium balance.	
		Absence of complaint to moment of occurrence of hypertony.
		Sparse (ueryless) hypertonic crises.
	- Characterised drawn.	Absence or short timed effect of (from) hypotensive therapy.
	- Anamnesis.	Occurence of hypertony after acute pains in lumbar region, trauma of kidneys or operation on it.
		Sudden aggravation of transistory, benign hypertony.
	General clinical methods of investigation	High numbers of diastolic pressure.
		- Orthestatic hypertony.
		- Assymetry of arterial pressure and pulse.
		- Systolic noise in the epigastric region
Symptomatology	- Isotope renography	- Angiospastic retino-pathy.
		- Erytermia.
	- Renal angiography	
Treatment	- Surgical (operative)	- Evidences (show) to organ storing ope-rations.
		- Types of organ storing operations.
		- Evidencence to nephre-ctomy.

Standard answers for situational tasks.

1. About presence on nephrogenic hypertony witnesses young age of patient, unsuccessful conservative therapy results of test govarda (left kidney excretes ions of sodium in 3% worst (less) than right). Evidence for radioisotope methods of examination (investigation) of kidneys. And also x-ray-renal angiography.

2. Clinical data's gives basis to suspect vasorenal forms of nephrogenic hypertony. Necessary to carry out (repair) renal arteriography.

3. Young age of patient, high number of arterial pressure, less difference between systolic and diastolic pressures, onset of disease, related with injuries of lumbar region (possible perirenal haematoma and also scars of kidneys), unsuccessful hypotensive therapy allowing signifying to patient with nephrogenic arterial hypertony.

For specifying diagnose it is necessary to investigate the patients arterial pressure lying, standing and after physical stress (burden) and also conduct uro x-ray (uro rentgen) investigations (excretory urography, arterio- and phlebography of kidneys).

4. Pain in the right lumbar region, palpating in vertical position of body of right kidney, increased arterial pressure allows to suspect nephroptosis of right side, nephrogenic arterial hypertony.

For specifying diagnosis shown aortography standing and lying. So that to allow the specification of condition of vessels of urography determines urodynamics of different positions of body of patient. Polypositional phlebography of kidneys showing (to show) signs of venous renal hypertensions.

5. Dull pains in the lumbar region, not every alternate flasher (outbreaks) of acute pielonephritis in the anamnesis, increased arterial pressure, signs of wrinkled kidneys during (in) x-ray (rentgen) investigations allows to specify or signify presence of wrinkled right kidney, nephrogenic arterial hypertony.

For specifying vascular architectonics shown vasographic investigation of kidneys. Removal of wrinkled kidneys allows hope of liquidation of arterial hypertony or stabilisation indicators of arterial pressure.

6. Patient has stenosis of right renal arteries, vasorenal forms of nephrogenic hypertony. Shown plastic surgeries (operations) of renal arteries, possible auto transplantation of right kidney.

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. Voizianov, 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., Kryzhanivskyi 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. 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

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/>