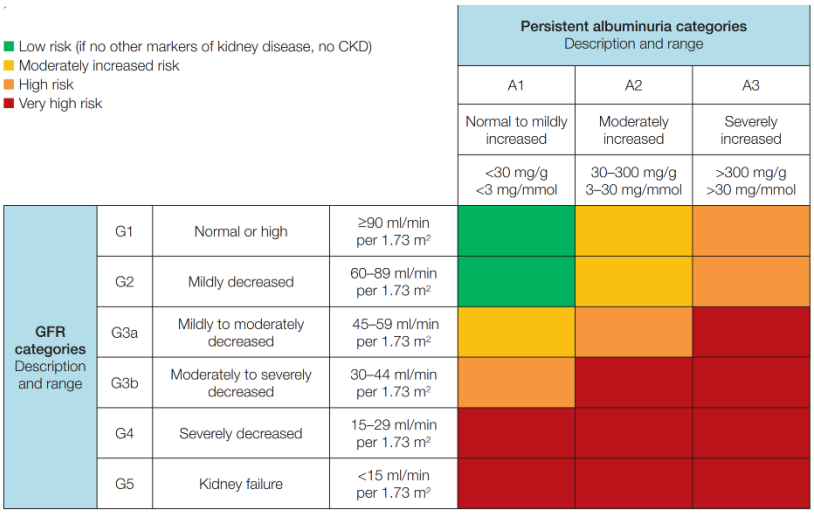
Renal Replacement Therapy

Single choice

1. First successful kidney transplant was performed from:
    A. Monozygotic twin
    B. Cadaveric kidney
    C. Brain-death patient
    D. Dizygotic twin
    E. The mother
2. According to the KDIGO classification of chronic kidney disease, how many stages of chronic kidney disease are?
    A. 1 stage
    B. 2 stages
    C. 3 stages
    D. 4 stages
    E. 5, with stage 3 divided in category G3a and G3b
3. According to the KDIGO classification of chronic kidney disease, albuminuria is categorized in how many stages?
    A. 3
    B. 5
    C. 6
    D. 2
    E. 1
4. According to the KDIGO classification of chronic kidney disease, individuals in stage G5 A3 are categorized in the group of:
    A. Low risk
    B. Moderately increased risk
    C. High risk
    D. Very high risk
    E. No risk
5. A person with an eGFR of 50 ml/min/1.73 m^2 and an uR of 35 mg/mmol has:
    A. CKD G3 A3
    B. CKD G4 A2
    C. CKD G5 A3
    D. CKD G1 A1
    E. CKD G1 A3
6. In the future, it is estimated that the need for renal replacement therapies will:
    A. Increase
    B. Reach a plateau
    C. Decrease slowly
    D. Remain the same
    E. Decrease exponentially



7. What is the used for the neutralization of low-molecular-weight heparin?
    A. Aspirin

B. Warfarin
C. Antibiotics
D. Protamine
E. NSAIDs

8. Which is the optimal vascular access for hemodialysis in ESRD?
   A. PTFE graft
   B. Arterio-venous fistula
   C. Tunneled central venous catheter
   D. Ulnar artery catheterization
   E. Femoral artery catheterization
9. How much time usually the patient will need to wait for the arterio-venous fistula to maturate before it can be used for hemodialysis?
   A. It can be used the next day after the surgery
   B. 6-8 weeks
   C. 6-8 months
   D. A few years
   E. A few days
10. In the picture, what kind of vascular access for hemodialysis you can see?

   A. Arteriovenous fistula
   B. Tunneled cuffed catheter
   C. Temporary venous catheter
   D. Femoral catheter
   E. Tenckhoff catheter for peritoneal dialysis
11. Which of the following is a chronic hemodialysis complication?
   A. Cramps
   B. Air embolism
   C. Clotting of extracorporeal circuit
   D. Hemolysis
   E. Amyloidosis
12. Aluminum toxicity is a chronic complication of what?
   A. Hemodialysis
   B. Peritoneal dialysis
   C. Renal transplant
   D. Hemadsorption
   E. Plasmapheresis
13. A major complication of peritoneal dialysis is:
   A. Hepatitis
   B. Malnutrition
   C. Aluminium intoxication
   D. Amyloidosis
   E. Peritonitis
14. How many categories of non-heart beating donors are in the Maastricht classification?
   A. 1
   B. 2
   C. 3
   D. 4
   E. 5

15. The best outcome in kidney transplantation are from:
    A. Living donor
    B. Donation after brain death
    C. Donors type I Maastricht
    D. Donors type II Maastricht
    E. Donors type V Maastricht
16. When performing a kidney transplantation, the native kidneys are usually:
    A. Removed, to make space for the graft
    B. Not removed
    C. Removed, to treat the chronic kidney disease
    D. Removed, to treat renal anemia
    E. Removed, to treat hyperkalemia

Multiple Choice

17. Which of the following functions are performed by the kidneys?
    A. Remove excess salt, water and acid.
    B. Remove or regulate electrolytes
    C. Make erythropoietin.
    D. Activate vitamin D
    E. Creates angiotensinogen
18. Hemodialysis can replace which of the following kidney's function?
    A. Make erythropoietin
    B. Remove excess water
    C. Remove waste products
    D. Activate vitamin D
    E. Remove excess salt
19. Which of the following are considered to be renal replacement therapies?
    A. Hemodialysis
    B. Peritoneal dialysis
    C. Renal transplant
    D. Molecular adsorbent recirculating system
    E. Extracorporeal membrane oxygenation
20. Urgent severe hyperkalemia can be treated with:
    A. Renal transplant
    B. Hemodialysis
    C. Extracorporeal membrane oxygenation
    D. Albumin infusion
    E. Insulin + glucose
21. Which of the following are urgent indication for a renal replacement therapy?
    A. Refractory fluid overload
    B. Liver cirrhosis
    C. Signs of uremia
    D. Severe metabolic acidosis
    E. Hemorrhagic stroke
22. Which of the following are urgent indications for renal replacement therapy in AKI?
    A. Severe hyperkalemia (plasma potassium concentration >6.5 mEq/L) or rapidly rising potassium levels
    B. Signs of uremia, such as pericarditis, encephalopathy

C. Certain alcohol and drug intoxications
D. Nephrotic syndrome
E. Heavy proteinuria

23. During hemodialysis, which substances can pass through the pores of the semi-permeable membrane?
    A. Urea
    B. Creatinine
    C. Electrolytes
    D. Albumin
    E. Antibodies
24. What is required for a typical hemodialysis?
    A. Dialysis membrane
    B. Dialysate
    C. Vascular access
    D. Anticoagulation
    E. Blood transfusion
25. Which of the following are included in a hemodialysis machine?
    A. Air detector
    B. Blood pump
    C. Dialyzer
    D. Extracorporeal oxygenation tool
    E. Erythropoietin infusion pump
26. What is the dialysate?
    A. A solution of ultrapure water
    B. A solution that is usually generated in a treatment plant
    C. Artificial blood
    D. Blood from a donor, with all the components
    E. Blood plasma
27. Anticoagulation during hemodialysis can be performed using:
    A. Unfractionated heparin
    B. Low-molecular-weight heparin
    C. Low-dosage aspirin
    D. Warfarin
    E. Protamine
28. Which of the following are options for vascular access in hemodialysis?
    A. Arterio-venous fistulas
    B. Tunneled, cuffed central venous catheter
    C. Temporary central venous catheter
    D. Swan-Ganz catheter
    E. Ureteric stent
29. What should the doctor know to preserve the AV fistula in chronic hemodialysis patients?
    A. Needling should only be carried out by a trained operator
    B. Never put a tourniquet or BP cuff on a fistula arm
    C. Do not use a fistula to take blood
    D. Administer erythropoietin
    E. Diminish the intake of dietary proteins
30. When caring of dialysis patients, usually you should:
    A. Administer lots of IV fluids to hydrate the patients

B. Provide potassium supplements
C. Place a urinary catheter
D. Check if the drug you want to administer is safe in ESRD patients
E. Assess regularly the fluid volume status

31. Which of the following are acute hemodialysis complications?
    A. Cramps
    B. Air embolism
    C. Clotting of extracorporeal circuit
    D. Hemolysis
    E. Amyloidosis
32. Which of the following are advantages of peritoneal dialysis?
    A. No need for vascular access
    B. Home-based therapy
    C. Less risk of transmission of blood-borne viruses
    D. It is performed less often than hemodialysis
    E. Preserves the residual renal function
33. The membrane in peritoneal dialysis is formed by:
    A. Capillary endothelium
    B. Supporting matrix
    C. Peritoneal mesothelium
    D. Cellulose membrane
    E. Synthetic membranes
34. Which of the following are considered absolute contraindications to peritoneal dialysis?
    A. Inguinal, umbilical, or diaphragmatic hernias
    B. No vascular access
    C. Hemodynamic instability
    D. High blood pressure
    E. Peritonitis
35. Which of the following are absolute contraindications to peritoneal dialysis?
    A. Patient or caregiver unable to train adequately in the technique
    B. Inguinal, umbilical, or diaphragmatic hernias (esp. pleuroperitoneal leak)
    C. Ileostomy or colostomy
    D. Abdominal wall infections or intra-abdominal sepsis, e.g. active diverticular disease
    E. Prostate cancer
36. Types of peritoneal dialysis (PD) are:
    A. Continuous ambulatory PD
    B. Automated PD
    C. Tidal automated PD
    D. Assisted automated PD
    E. Weekly PD
37. Which of the following can be complications of peritoneal dialysis?
    A. Peritonitis
    B. Catheter exit site infection
    C. Drainage problems of the catheters
    D. Air embolism
    E. Peritoneal leaks
38. When it is preferred to elect peritoneal dialysis instead of hemodialysis?
    A. To preserve residual renal function

B. The patient is hemodynamic instable
C. When the patient has many comorbidities
D. When the patient has a history of abdominal surgery
E. When the patient has peritonitis

39. What are the benefits of renal transplantation?
    A. Improved patient's quality of life
    B. Improved patient survival
    C. Cheaper for the health economics on the long run
    D. No need for immunosuppression
    E. No need for erythropoietin administration
40. Which of the following sentences regarding kidney transplantation are true:
    A. In the first few months after kidney transplantation the relative risk of death is higher compared to patients on hemodialysis.
    B. After the first few months after kidney transplantation the relative risk of death is higher compared to patients on hemodialysis.
    C. On the long run, survival rate is better in hemodialysis.
    D. On the long run, survival rate is better in kidney transplantation.
    E. On the long run, survival rate in hemodialysis is similar to kidney transplantation.
41. A major global issue related to kidney transplantation is:
    A. Immunosuppression
    B. Supply of organs
    C. Lack of donors
    D. Cancer
    E. Infectious diseases
42. In the typical recipient work-up it is included:
    A. Blood group
    B. HLA type
    C. Complete blood count
    D. Whole body MRI
    E. PET scan
43. To check for compatibility matching donor to recipient in kidney transplantation, you must consider:
    A. HLA
    B. Anti-HLA antibodies
    C. Blood group
    D. Chest X-ray
    E. Complete blood count
44. What are the advantages of live donor transplantation?
    A. Better graft and patient survival than deceased donor transplantation
    B. The possibility to do pre-emptive transplants
    C. Stress to donor and family
    D. The increased risk of major surgical complication to the donor
    E. The increased risk of donor to develop chronic kidney disease later in the lifetime
45. The transplanted kidney most commonly are implanted:
    A. In the right iliac fossa
    B. In the place of the native kidney, after they are removed
    C. In the left iliac fossa
    D. In the abdomen, near the native kidney

E. Behind the native kidney

46. Which of the following are true regarding the induction of immunosuppression after a kidney transplantation?
    A. Initially are used drugs in low dosages
    B. Initially are used drugs in higher dosages
    C. It is best to choose drugs that are going to be used subsequently for the maintenance of immunosuppression
    D. There are is no need for induction of immunosuppression right after the surgery
    E. Induction of immunosuppression is not required from live donor family member
47. What is included in the standard "triple therapy" of immunosuppression?
    A. A calcineurin inhibitor
    B. An antimetabolite, such as azathioprine or mycophenolic acid
    C. Low-dosage aspirin
    D. Corticosteroids
    E. Phosphate binders
48. Which can be acute complications after kidney transplantation?
    A. Bleeding
    B. Lymphocele
    C. Vascular thrombosis
    D. Chronic rejection
    E. Diabetes mellitus
49. What kind of graft rejections are?
    A. Acute rejection
    B. Hyperacute rejection
    C. Chronic rejection
    D. Delayed graft function
    E. Transitory rejection
50. Which of the following are true?
    A. BK nephropathy is caused by BK polyomavirus
    B. BK nephropathy is a chronic viral infection
    C. BK nephropathy is caused by *Mycobacterium tuberculosis*
    D. BK nephropathy is an acute viral infection
    E. BK nephropathy needs to be treated with an increased dosage of immunosuppression
51. Kidney-pancreas transplantation is considered the treatment of choice for:
    A. Diabetic patients with end-stage renal disease
    B. Patients with acute pancreatitis and end-stage renal disease
    C. Patients with gestational diabetes and renal diseases
    D. Patients with polycystic kidney disease
    E. Type 1 diabetes and chronic kidney disease G5 KDIGO

Hereditary and Congenital Diseases of the Kidney

Single choice

1. Alport syndrome is caused by a defect in which protein:
    A. Type IV collagen
    B. Aquaporin
    C. Na^+/K^+-ATPase
    D. Tubulin
    E. Hemoglobin
2. Most of the cases of Alport syndrome are due to:
    A. Mutations in the PAH gene on chromosome 12, which encodes phenylalanine hydroxylase
    B. Hereditary deficiency of the enzyme α-galactosidase
    C. X-linked inherited mutation in the COL4A5 gene
    D. Tobacco smoking
    E. PKD1 or PKD2 gene mutations
3. Alport syndrome usually has a more serious clinical course in which category groups:
    A. Children
    B. Females
    C. It affects both males and females the same in most of the cases
    D. Males
    E. In female carriers
4. Which of the following can be considered an alternative less invasive technique to kidney biopsy to assess for Alport syndrome?
    A. Intraocular biopsy
    B. Cochlear biopsy
    C. Skin biopsy
    D. Liver biopsy
    E. Bladder biopsy
5. To be able to see the changes in the glomerular basement membrane at immunohistochemistry, the kidney tissue should be stained for:
    A. α chain of type IV collagen
    B. IgA
    C. IgG
    D. IgM
    E. IgE
6. What is the specific treatment for Alport syndrome?
    A. Intravenous infusion of collagen type IV
    B. Collagen intradermal injections
    C. Oral ingestion of essential amino acids
    D. There is no specific treatment available
    E. Oral metformin
7. Which of the following is the preferred option for people who developed end-stage renal disease due to Alport syndrome?
    A. Kidney transplantation
    B. Hemodialysis
    C. Peritoneal dialysis

D. Plasmapheresis
E. Hemodiafiltration

8. What kind of antibodies may develop in <5% in patients transplanted Alport patients?
    A. ANCA (Antineutrophil Cytoplasmic Antibodies)
    B. ANA (Anti-Nuclear Antibodies)
    C. Rheumatoid factor
    D. Anti-GBM (Anti-Glomerular Basement Membrane)
    E. Anti-HBs
9. Structurally, in thin basement membrane nephropathy, the glomerular membrane:
    A. Is thinner than in normal individuals, usually <200 nm compared to ± 350nm
    B. Has larger gaps than in normal individuals
    C. Is thicker than in normal individuals
    D. Has the same size as in normal individuals
    E. Is absent
10. In thin basement membrane nephropathy, what gene is affected
    A. COL4A3 or COL4A4, as in Alport syndrome
    B. PDK1
    C. PKD2
    D. PAH gene on chromosome 12, which encodes phenylalanine hydroxylase
    E. GLA gene, that encodes for enzyme α-galactosidase
11. The most common symptom of thin basement membrane nephropathy is:
    A. Proteinuria
    B. Uremia
    C. Hyperkalemia
    D. Increased blood pressure
    E. Microscopic hematuria
12. What are the extrarenal manifestations of thin basement membrane nephropathy?
    A. Liver cysts
    B. Cerebral aneurysms
    C. Pneumonitis
    D. Thin basement membrane nephropathy has no extrarenal manifestations.
    E. Enlarged lymph nodes
13. The management of thin basement membrane nephropathy includes:
    A. Annual follow-up of patients with uncomplicated thin basement membrane nephropathy
    B. Immunosuppression
    C. Collagen injections to correct the defected COL4A gene
    D. Steroids
    E. Nonsteroidal anti-inflammatory drugs
14. Anterior lenticonus is considered a pathognomonic sign for which of the following disease?
    A. Thin basement membrane nephropathy
    B. Autosomal Dominant Polycystic Kidney Disease (PKD)
    C. Fabry disease
    D. Gitelman syndrome
    E. Alport syndrome
15. Fabry disease is caused by a deficiency of what enzyme:
    A. Xanthine oxidase
    B. Amylase

C. Alanine transaminase
D. α-galactosidase A (α-Gal A)
E. Aspartate transaminase

16. The best management method in Fabry disease is:
    A. Enzyme replacement therapy, e.g. agalsidase
    B. E inhibitors
    C. Angiotensin receptors blockers
    D. Immunosuppression with biological therapy
    E. Steroids
17. The biggest flaw of enzyme replacement therapy in Fabry disease is:
    A. Severe side effects
    B. Contraindications
    C. High price
    D. Large dosage
    E. High incidence of allergic reactions
18. How many clinical variants of nephronophthisis have been described based upon the median age of onset of end-stage renal disease?
    A. 3 – infantile, juvenile, adolescent
    B. 1 – infantile
    C. 2 – young adult, adult
    D. 5 – infantile, juvenile, adolescent, adult, geriatric
    E. 4 – infantile, juvenile, adolescent, geriatric

Multiple Choice

19. Which of the following are monogenic diseases of the kidney?
    A. Autosomal dominant polycystic kidney disease
    B. IgA nephropathy
    C. Membranous nephropathy
    D. Poststreptococcal glomerulonephritis
    E. Alport syndrome
20. Classically, Alport syndrome presents as a triad that includes:
    A. Family history of progressive nephropathy
    B. Sensorineural deafness
    C. Rapidly progressive glomerulonephritis
    D. Ocular abnormalities
    E. Multiple cysts in the kidney and liver
21. What is the pathogenesis of Alport syndrome?
    A. Defective basement membrane formation in the glomerulus, cochlea and eye
    B. Formation of cysts in the renal cortex, eye and cochlea
    C. Lesion of the renal tubules
    D. Decreased metabolism of the amino acid phenylalanine
    E. Defective α chain of type IV collagen
22. What are the ocular manifestations in Alport syndrome?
    A. Conjunctivitis
    B. Uveitis
    C. Anterior lenticonus
    D. Keratoconjunctivitis sicca
    E. Retinal changes
23. You may suspect Alport syndrome in which of the following cases:

A. A family history of Alport syndrome
B. A family history of progressive chronic kidney disease
C. A patient with anterior lenticonus
D. A patient with unilateral agenesis of kidney
E. A family history of kidney stones

24. Among the investigations that can help to diagnose Alport syndrome are:
    A. Next-generation molecular testing for detecting mutation in COL4
    B. Kidney biopsy
    C. Skin biopsy
    D. Liver biopsy
    E. Targeted mutation analysis
25. In a patient with Alport syndrome and proteinuria, treatment options include:
    A. E inhibitors
    B. Angiotensin receptor blockers
    C. Glucocorticosteroids
    D. ß-blockers
    E. Immunosuppression
26. Why E inhibitors and angiotensin receptor blockers are used in patients with Alport syndrome:
    A. To treat high blood pressure, which is a risk factor for chronic kidney disease
    B. To upregulate COL4A expression
    C. To lower proteinuria
    D. To treat the sensorineural deafness
    E. To halt the progression of anterior lenticonus
27. What options are available to manage extrarenal manifestations in Alport syndrome?
    A. Hearing aids
    B. Surgical management of anterior lenticonus, i.e. clear lens phacoemulsification.
    C. Respiratory aids
    D. Walking aids
    E. Ureteric stents
28. Thin basement membrane nephropathy was previously known as “benign familial hematuria”, because:
    A. It usually presents only with microscopic hematuria and normal kidney function
    B. It is an autosomal dominant condition
    C. It is an inherited familial condition
    D. It presents with multiple benign tumors in the kidney that can lead to hematuria
    E. It is caused by a virus that is transmitted vertically, i.e. from mother to child
29. Thin basement membrane nephropathy is:
    A. A very rare disease, with less than 1000 people suffering from it globally
    B. Present in 75% of post-mortem studies, according to one paper
    C. Clinically diagnosed in less than 1% of the general population
    D. Can be diagnosed only after death
    E. The most common cause of nephrotic syndrome
30. Which of the following are possible clinical manifestations of thin basement membrane nephropathy?
    A. Microscopic hematuria
    B. Macroscopic hematuria
    C. Liver cysts
    D. Heart failure

E. Ocular impairment

31. Hematuria from glomerular origin can be suspected when:
    A. Red blood cells are deformed
    B. There are also of R casts in the urinary sediment
    C. There is also concomitant anemia
    D. There is bacteriuria
    E. The urinary Ph is acidic
32. The diagnosis of thin basement membrane nephropathy is usually inferred from:
    A. The benign presentation and course
    B. The positive family history of hematuria
    C. The negative family history of hematuria
    D. The negative family history of kidney failure
    E. Severe renal disease from birth
33. In which cases kidney biopsy is necessary when suspecting thin basement membrane nephropathy?
    A. When the patient is considered as a kidney donor
    B. When patient plans a family with another individual with isolated hematuria being planned?
    C. When the clinical manifestations are inconclusive, e.g. nephritic syndrome
    D. When suspecting thin basement membrane nephropathy is associated with proteinuria
    E. When the kidney function is normal
34. What can be observed at microscopy in a patient with thin basement membrane nephropathy?
    A. Conventional immunofluorescence is usually negative
    B. Light microscopy is usually normal
    C. On electron microscopy – reduction of glomerular basement membrane
    D. Formation of glomerular crescent
    E. Subepithelial immune deposits on immunofluorescence
35. Which of the following can help differentiate between thin basement membrane nephropathy and Alport syndrome?
    A. Presence of high blood pressure
    B. Severe progressive renal failure
    C. Deafness and anterior lenticonus
    D. Hematuria
    E. History of ESRD in family
36. Which of the following can be found in thin basement membrane nephropathy and Alport syndrome?
    A. Hematuria
    B. Proteinuria
    C. High blood pressure
    D. History of end-stage renal disease in the family
    E. Deafness
37. Which of the following can be found in Alport syndrome, but not in thin basement membrane nephropathy?
    A. Deafness
    B. Anterior lenticonus
    C. Severe renal dysfunction
    D. Hematuria

E. Proteinuria

38. Which of the following sentences are true?
    A. Thin basement membrane nephropathy is a benign disease
    B. Thin basement membrane nephropathy will lead inevitable to end-stage renal disease
    C. Alport syndrome can lead to end-stage renal disease
    D. Anterior lenticonus is a pathognomonic sign for thin basement membrane nephropathy
    E. Deafness is a typical manifestation of thin basement membrane nephropathy
39. Which of the following hereditary diseases can be X-linked?
    A. Fabry disease
    B. Alport syndrome
    C. Autosomal Dominant Polycystic Kidney Disease (PKD)
    D. Autosomal Recessive Polycystic Kidney Disease (ARPKD)
    E. Thalassemia
40. Which of the following skin manifestations can be present in Fabry disease?
    A. Telangiectasias on ears
    B. Raynaud phenomenon
    C. Extensive angiokeratomas
    D. Gottron's papules
    E. Malar rash
41. What tests can be helpful in the diagnosis of Fabry disease?
    A. Genetic mutational analysis of the GLA gene
    B. Biopsy of the affected kidney with intracellular evidence of Gb3 inclusions
    C. Echocardiography
    D. MRI of the brain
    E. Spirometry
42. What is included in the non-specific treatment of Fabry disease?
    A. E inhibitors
    B. Angiotensin receptors blockers
    C. Dialysis
    D. Transplantation
    E. Immunosuppression
43. Which of the following are characteristic for Bartter and Gitelman syndromes?
    A. Hypokalemia
    B. Metabolic alkalosis
    C. Hyperreninemia
    D. Liver cysts
    E. Renal cysts
44. Which of the following sentence is true regarding Bartter and Gitelman syndrome?
    A. Gitelman syndrome is a much more common disease than Bartter syndrome
    B. Barter syndrome is a much more common disease than Gitelman syndrome
    C. Barter syndrome is usually a less severe condition
    D. It is very straightforward to diagnose
    E. There is no specific treatment
45. The treatment of Bartter and Gitelman syndrome includes:
    A. Sodium, potassium, and magnesium supplements
    B. NSAIDs and drugs that block distal tubule sodium-potassium exchange
    C. Angiotensin inhibitors

D. Kidney transplantation
E. Immunosuppression

46. Which of the following is true regarding von Hippel-Lindau?
    A. It is an inherited, autosomal dominant syndrome
    B. It is manifested by a variety of benign and malignant tumors
    C. There are two types based upon the likelihood of developing pheochromocytoma
    D. Can lead to end-stage renal disease due to formation of multiple kidney cysts
    E. Initial manifestations occur only in early childhood
47. Nephronophthisis must be differentially diagnosed with:
    A. Autosomal dominant polycystic kidney disease (PKD)
    B. Autosomal recessive polycystic kidney disease (ARPKD)
    C. Fabry disease
    D. Alport disease
    E. Thin basement membrane nephropathy
48. Renal transplantation in nephronophthisis is:
    A. Preferred, because outcome is excellent
    B. Not preferred, because nephronophthisis is a systemic disease
    C. Not preferred, because nephronophthisis is an autoimmune disease
    D. Preferred, because recurrence of the tubular injury does not recur in the transplanted kidney
    E. Not preferred, because there is recurrence of nephronophthisis on the transplanted kidney
49. Which of the following technologies may be helpful in the future to treat hereditary kidney diseases?
    A. Gene therapy
    B. Gene editing, e.g. CRISP-Cas9
    C. Gene silencing
    D. Viral gene
    E. Magnetic resonance of water molecules from urine
50. In case of renal cell carcinoma in von Hippel-Lindau disease, which of the following are the preferred methods of treatment?
    A. Hemodialysis
    B. Peritoneal dialysis
    C. Nephron sparing surgery
    D. Nephrectomy, if nephron sparing surgery is not possible
    E. Medication

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51. Which of the following renal manifestations can be found in patients with tuberous sclerosis complex?
    A. Angiomyolipoma
    B. Benign cysts
    C. Renal cell carcinoma
    D. Glomerular diseases
    E. Nephroptosis

Autosomal Dominant Polycystic Kidney Disease (PKD)

Single choice

1. Which of the following is the most common genetic kidney disease worldwide?
    A. PKD
    B. ARPKD
    C. Alport syndrome
    D. Fabry disease
    E. Fanconi disease
2. Which of the following hereditary kidney disease is responsible for up to 10% patients with end-stage renal disease?
    A. Alport syndrome
    B. ARPKD
    C. Diabetes mellitus type 2
    D. Nephronophthisis
    E. PKD
3. Which of the following sentences regarding PKD is true?
    A. PKD is induced by smoking during pregnancy
    B. PKD is a X-linked hereditary disease
    C. Most cases of PKD are caused by mutations of two genes: PKD1 or PKD2
    D. PKD is a non-hereditary disease
    E. PKD is a congenital disease
4. Where in the kidney cysts are formed in PKD?
    A. Glomerulus
    B. Distal tubules and collecting ducts
    C. Renal pelvis
    D. Renal calyx
    E. Ureters
5. In later stages of PKD, how are the kidneys size?
    A. Can grow 20 times bigger than normal
    B. The size of the kidney does not change over the course of the disease
    C. Smaller size than a healthy kidney, due to fibrosis
    D. A little bit enlarged than a healthy kidney, due to compensation of functional nephrons
    E. Size can vary from patient to patient, some have smaller size, while other patients can have enlarged kidneys
6. In patients with PKD, what is the usual composition of kidney stones?
    A. Uric acid or calcium oxalate
    B. Struvite
    C. Cystine
    D. Collagen
    E. Fibrine
7. What is the preferred method to diagnose urinary stones in patients with PKD?
    A. Ultrasound
    B. CT urography
    C. MRI with gadolinium contrast media
    D. Scintigraphy

E. Plain abdominal X-ray

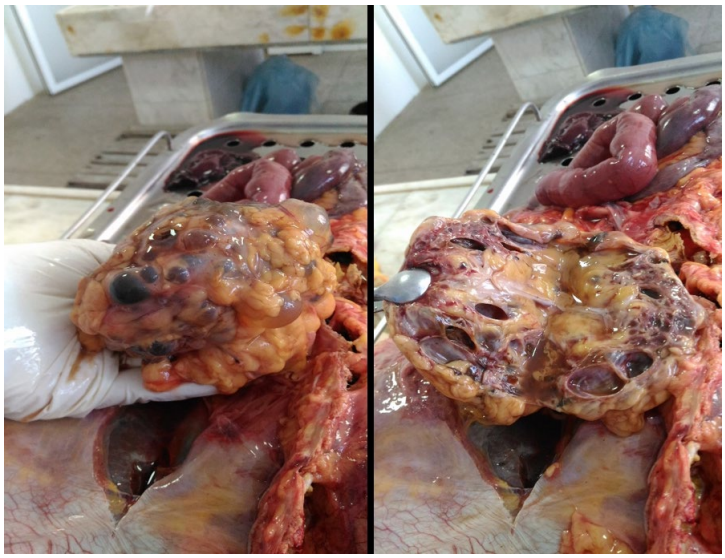
8. Why ultrasound is not the method of choice in detecting renal stones in patients with PKD?
    A. Large cysts can obscure the view of collecting system
    B. It is invasive
    C. It is very expensive
    D. Takes a long time to perform the procedure
    E. The patients need a special preparation
9. Why the diagnosis of urinary tract infection in patients with PKD cannot be made solely after a urinalysis?
    A. Because sterile pyuria can be often found in PKD
    B. Because urinalysis only provides physical examination of the urine
    C. Because urinalysis only provides chemical examination of the urine
    D. Because urinalysis only provides macroscopic examination of the urine
    E. Because PKD patients do not have any symptoms of urinary tract infection
10. What should you suspect when a patient with PKD presents with flank pain, fever and negative urine culture?
    A. Cystitis
    B. Acute pyelonephritis
    C. Cyst infection
    D. Lower urinary tract infection
    E. Urethritis
11. Over the course of the disease which of the following manifestations almost all patient with PKD will develop?
    A. Hypertension
    B. Renal cancer
    C. Cerebral aneurysm
    D. Meningeal diverticula
    E. Pancreas cysts
12. In patients with PKD, the urine specific gravity is usually:
    A. Low, due to concentrating defects
    B. High, due to excretion of uric acid
    C. Normal
    D. Varied, depending on the presence of comorbidities
    E. Low, due to increased glomerular filtration rate
13. What is the range of proteinuria in patients with PKD?
    A. Nephrotic-range proteinuria
    B. Low-grade proteinuria
    C. Usually >3.5 g/24h
    D. Proteinuria is never present in patients with PKD
    E. Light-chain proteinuria
14. The most common extrarenal manifestation of PKD is:
    A. Cerebral aneurysms
    B. Arrhythmia
    C. Pancreas cysts
    D. Seminal vesicles cysts
    E. Multiple hepatic cysts
15. Which of the following is considered the most serious complication of PKD?
    A. Lower urinary tract infection

B. Nephrolithiasis
C. Ruptured cerebral aneurysm
D. Cyst infection
E. Anemia

16. Which test is preferred to assess cardiac abnormalities in patients with PKD?
    A. Heart MRI
    B. Chest CT
    C. Chest X-ray
    D. Echocardiography
    E. DXA (Dual-energy X-ray absorptiometry) scan
17. A difference between localized renal cystic disease and PKD is:
    A. Localized cystic disease is bilateral, while PKD unilateral
    B. Localized cystic disease is unilateral, while PKD bilateral
    C. Localized cystic disease leads to end-stage renal disease, while patients with PKD will never reach end-stage renal disease
    D. Localized cystic disease is a hereditary disease
    E. Localized cystic disease is a systemic disease
18. Which of the following drugs is considered a specific treatment for PKD?
    A. E-inhibitors, e.g. enalapril, ramipril
    B. Angiotensin receptors blocker, e.g. valsartan
    C. Low-dosage aspirin
    D. Tolvaptan
    E. NSAIDs
19. What is the general blood pressure goal in patients with PKD?
    A. <140/90 mmHg
    B. <130/80 mmHg
    C. <160/90 mmHg
    D. <150/70 mmHg
    E. <90/60 mmHg
20. What is the preferred drug for hypertension treatment in patients with PKD?
    A. Telmisartan
    B. Furosemide
    C. Low-dosage aspirin
    D. Mannitol
    E. Labetalol
21. What is the preferred drug for hypertension treatment in patients with PKD?
    A. Clonidine
    B. Nifedipine
    C. Ramipril
    D. Propranolol
    E. Indapamide
22. Which is the action of Tolvaptan, a novel and specific treatment for PKD?
    A. Vasopressin antagonists
    B. Somatostatin analogues
    C. E-inhibitor
    D. ß-blocker
    E. Osmotic diuretic
23. When performing a kidney transplantation, it is recommended to:

A. Perform unilateral pretransplantation nephrectomy of the polycystic kidney in all patients
B. Perform bilateral pretransplantation nephrectomy of the polycystic kidneys in all patients
C. Avoid nephrectomy whenever possible
D. Perform unilateral pretransplantation nephrectomy to make space for the graft
E. Perform nephrectomy in case of controlled hypertension

24. In the next picture you can see a macroscopic view a kidney and a cross-section, what diagnoses do you suspect?



A. IgA nephropathy
B. Polycystic kidney disease
C. Pyelonephritis
D. Alport syndrome
E. Thin basement membrane nephropathy

25. Which of the following statements about PKD and intracranial aneurysm is true?
A. All PKD patient should be screened for intracranial aneurysms
B. Most intracranial aneurysms rupture
C. The risk for rupture of an intracranial aneurysm depends on its size and location
D. Magnetic resonance angiography to screen for intracranial aneurysms is contraindicated in advanced chronic kidney disease (CKD) because it requires administration of gadolinium
E. None of the answers are true

26. Which of the following hereditary disease is the most common cause of end-stage renal disease worldwide?
A. Alport syndrome
B. Autosomal Recessive Polycystic Kidney Disease (ARPKD)
C. Autosomal Dominant Polycystic Kidney Disease (PKD)
D. Bartter syndrome
E. Thin basement membrane nephropathy

Multiple Choice

27. In most cases of PKD, which genes have mutations?
A. PKD1
B. PKD2
C. COL4A
D. GLA gene, that encodes enzyme α-GAL
E. PAH gene, that encodes for enzyme phenylalanine hydroxylase

28. What are the extrarenal manifestations of PKD?
A. Polycystic liver disease
B. Cerebral aneurysms
C. Pancreas cysts
D. Small joint pain
E. Pneumonitis

29. What are the renal manifestations in PKD?
    A. Flank pain, which can be cause by cyst hemorrhage, infection or renal calculi
    B. Nephrolithiasis
    C. Hematuria
    D. Urinary tract infection
    E. Nephrotic syndrome
30. Hematuria in PKD can be caused by:
    A. A ruptured cyst
    B. Nephrolithiasis
    C. Urinary tract infection
    D. Hypertension
    E. Kidney neoplasm
31. Which of the following bacteria are often the cause of urinary tract infections in patients with PKD?
    A. *Escherichia coli*
    B. *Klebsiella*
    C. *Mycobacterium*
    D. *Proteus*
    E. Moraxella catarrhalis
32. Which of the following can present as a urinary tract infection in patients with PKD?
    A. Cystitis
    B. Acute pyelonephritis
    C. Cyst infection
    D. Renal abscess
    E. Vaginitis
33. Why is important to diagnose hypertension in patients with PKD?
    A. Hypertension is an independent risk factor in the progression of CKD
    B. Uncontrolled blood pressure increases morbidity and mortality
    C. Hypertension is a major contributor in the progression of cardiovascular disease
    D. Hypertension can lower the risk of lower urinary tract infections
    E. Hypertension will lower the risk of nephrolithiasis
34. Which of the following sentences are true regarding renal cell carcinoma and PKD?
    A. Some studies have shown that RCC is more frequent in patients with KPD compared with the general population
    B. It is difficult to diagnose renal cell carcinoma in PKD
    C. A definite diagnosis of renal cell carcinoma can be made after percutaneous aspiration and cytological examination
    D. An ultrasound of the kidney is the “gold standard” in diagnosing renal cell carcinoma in PKD
    E. Screening for renal cell carcinoma should be done in all patients with PKD
35. Which of the following sentences are true regarding polycystic liver disease in PKD?
    A. Most common extrarenal manifestation
    B. Associated with PKD1 and PKD2 genotypes
    C. Hepatic cysts frequency increases with age
    D. Hepatic cysts are always symptomatic
    E. Hepatic cysts are rarely observed in patients with PKD
36. In which cases should you screen for cerebral aneurysm in patients with PKD?
    A. In all patients with PKD
    B. High-risk patients with previous rupture

C. A high-risk occupation (e.g. airline pilot)
D. Screening for cerebral aneurysm is never needed
E. A positive family history of an intracerebral bled

37. Which of the following are preferred methods for screening of cerebral aneurysms?
    A. CT angiography
    B. MRI with gadolinium medium contrast
    C. Ultrasound of the cerebral arteries
    D. Scintigraphy
    E. Positron emission tomography scan
38. The most common cardiac abnormalities in patients with PKD are:
    A. Mitral valve prolapse
    B. Aortic regurgitation
    C. Cardiomyopathy
    D. Wolff-Parkinson-White syndrome
    E. Sinus arrhythmia
39. Patients with PKD can develop cysts in the following organs:
    A. Kidneys
    B. Liver
    C. Pancreas
    D. Seminal vesicles
    E. Lungs
40. The diagnosis of PKD is usually made:
    A. Clinical picture
    B. Imaging of kidney
    C. Medical history
    D. Genetic testing
    E. Specific blood tests
41. Which of the following sentences are true regarding the diagnosis of PKD?
    A. Genetic testing is done in every suspicion of PKD
    B. The diagnosis of PKD relies principally upon imaging of the kidney
    C. Ultrasonography is most commonly used imaging modality
    D. Genetic testing is cheap because there is only one PKD mutation
    E. Genetic testing is usually performed only for research purposes
42. PKD must be differentiated from which diseases:
    A. Multiple benign simple cysts
    B. Localized renal cystic disease
    C. Acquired renal cystic disease
    D. Autosomal recessive polycystic kidney disease
    E. IgA nephropathy
43. Which of the following characterize benign simple renal cysts?
    A. Simple renal cysts are uncommon in patients younger than 30 years old
    B. Simple renal cysts will lead to end-stage renal disease
    C. It is rare for patients aged 30 to 59 years to have benign simple renal cysts in each kidney
    D. Simple renal cysts can manifest with nephrotic syndrome
    E. Simple renal cysts are the main cause of chronic kidney disease globally
44. Acquired renal cystic disease is distinguished from PKD by:
    A. No family history in acquired renal cystic disease
    B. The kidneys are small or normal in size in acquired renal cystic disease

C. Acquired renal cystic disease is a hereditary disease
D. Acquired renal cystic disease has many extrarenal manifestations
E. On ultrasound, the contour of acquired renal cystic disease is smooth, while on PKD, kidneys have a cystic contour

45. In patients with PKD, it is recommended:
    A. To increase the intake of sodium, >4 grams per day
    B. To decrease the intake of sodium, <2 grams per day
    C. To decrease the intake of sodium, because it was associated with a lower risk of CKD progression
    D. To decrease the intake of sodium, because it was associated with a lower risk of kidney growth
    E. To decrease the intake of sodium, to decrease the risk of nephrolithiasis
46. In patients with PKD, it is recommended:
    A. Increase fluid intake, if GFR >30 mL/min/1.73 m^2
    B. Increase fluid intake, if GFR <30 mL/min/1.73 m^2
    C. Increase fluid intake, if renal function preserved, because increased fluid intake inhibits cyst growth
    D. Increase fluid intake in end-stage renal disease
    E. Increase fluid and sodium intake
47. When it would be advisable to perform a unilateral or bilateral nephrectomy in patients with PKD?
    A. There are recurrent infections
    B. Suspected malignancy
    C. Uncontrollable renal hemorrhage among patients who have a contraindication to or failure of intra-arterial embolization.
    D. Development of ventral hernia due to massive kidney sizes.
    E. Unilateral or bilateral nephrectomy should be performed in all patients
48. Which of the following sentences are true regarding hemodialysis and PKD?
    A. Survival of patients with PKD undergoing hemodialysis is better compared with other patients
    B. There is a lower incidence of coronary artery disease in patients with PKD compared with other patients on hemodialysis
    C. Survival of patients with PKD undergoing hemodialysis is worse compared with other patients
    D. The vascular access for hemodialysis is more difficult in patients with PKD
    E. Hemodialysis is a contraindication in patients with PKD
49. Which of the following risk factors have been proven to influence the progression of renal disease in PKD?
    A. Genetic factors, i.e. patients with mutations in PKD2 dene develop fewer cysts and progress more slowly
    B. Kidney size
    C. Hypertension
    D. Early onset of symptoms
    E. Female sex
50. The treatment of a cyst hemorrhage in PKD includes:
    A. Bed rest
    B. Analgesics, if it is associated with pain
    C. Increased fluid intake to prevent obstructing clots
    D. Low-molecular-weight heparin

E. E inhibitors

Diabetic nephropathy

Single choice

1. Which patients will represent the majority in the dialysis department worldwide?
    A. Polycystic kidney disease
    B. Glomerular diseases
    C. Obesity
    D. Diabetes mellitus
    E. Obstructive uropathy
2. The most unfavorable progression factor of diabetic nephropathy is:
    A. Itching
    B. Hematuria
    C. Proteinuria
    D. Bacteuria
    E. Uricosuria
3. Which classification is used for the staging of diabetic nephropathy?
    A. NYHA
    B. KDOQI
    C. RIFLE
    D. AKIN
    E. Mogensen
4. Two of the most common causes leading to the installation of chronic terminal kidney disease are:
    A. Allergies and diabetes
    B. Infections and diabetes
    C. Diabetes and hypertension
    D. Infections and high blood pressure
    E. Diabetes and obesity
5. Which category of drugs reduce the frequency of heart complications, peripheral vascular resistance and angiotensin II secretion:
    A. Diuretics
    B. β-blockers
    C. α1-blockers
    D. Calcium channel blockers
    E. Angiotensin conversion enzyme inhibitors
6. The patient with diabetic nephropathy may require the administration of erythropoietin for the management of:
    A. Anemia
    B. Neutropenia
    C. Pancytopenia
    D. Thrombocytopenia
    E. Hypoproteinemia
7. Proteinuria is a risk factor for the progression of diabetic nephropathy:
    A. Which can be modified
    B. Which cannot be modified
    C. Proteinuria is not a risk factor
    D. Proteinuria appears only in the terminal stage
    E. Proteinuria has a favorable prognostic factor
8. At what values should blood pressure be lowered to obtain a nephroprotective effect:

A. Systolic blood pressure below 120 mmHg, if well tolerated
B. Diastolic blood pressure over 90 mmHg
C. Systolic blood pressure below 120 mmHg, even if not well tolerated
D. Systolic blood pressure above 140 mmHg, if well tolerated
E. Systolic blood pressure below 90 mmHg

9. By what mechanism it is considered that angiotensin converting enzyme inhibitors reduce proteinuria:
   A. Dilation of efferent arteriole with decrease of intraglomerular pressure
   B. Decreased systolic hypertension
   C. Decreased diastolic hypertension
   D. Reduction of Na reabsorption in the collecting tubes
   E. Direct inhibition of renin
10. The term uremia generally means:
   A. BUN levels
   B. Urea concentration in the blood
   C. Increased creatinine in the blood
   D. Clinical syndrome resulting from marked loss of renal function
   E. Increased uric acid in the blood
11. The main cause of anemia in patients with diabetic nephropathy is:
   A. Decreased erythropoietin synthesis
   B. Presence of erythropoietin inhibitors
   C. Hemolysis
   D. Gastrointestinal bleeding
   E. Deficiency of folic acid and vitamin B12
12. What drugs are given to treat hyperlipidemia in diabetic nephropathy:
   A. Statins
   B. Angiotensin converting enzyme inhibitors
   C. Angiotensin receptor blockers
   D. Phosphorus chelators
   E. Laxatives
13. Which of the following situations are the predisposing factors for urinary tract infections?
   A. Hypertension
   B. Acute pancreatitis
   C. Male sex
   D. Diabetes
   E. Young age
14. Which of the following statements defines polyuria?
   A. Abnormal growth of the number of micturition in 24 hours
   B. Increased diuresis over 2000 ml / 24 hours
   C. Involuntary or unconscious emission of urine
   D. The need to urinate as soon as the sensation of urination has appeared
   E. Inability to urinate

Answer B

15. Isolated detection of hyaline cylinders in the diabetic patient's urine demonstrates:
   A. Chronic glomerulonephritis
   B. Chronic pyelonephritis
   C. Renal amyloidosis
   D. Renal pathology without specifying the disease

E. It has no diagnostic value

16. Select the FALSE sentence regarding transient proteinuria:
    A. Appears in febrile conditions
    B. Appears after exposure to high or low temperatures
    C. It disappears with the removal of the causal factor
    D. It does not disappear when the causal factor is removed
    E. The proteinuria values usually do not exceed 1g / 24 hours
17. Select the methods that CANNOT differentiate hematuria from diabetic nephropathy with hematuria from urological pathologies:
    A. CT urogram
    B. Urinary sediment microscopy
    C. Cystoscopy
    D. Ultrasonography of the kidneys and bladder
    E. Radioisotope renography
18. Select the FALSE statement regarding renal edema:
    A. Has a tendency towards generalization (anasarca)
    B. Skin temperature is normal
    C. It is soft
    D. It is located periorbital, legs
    E. It is accompanied by increased skin temperature
19. Which of the following groups of drugs has a significant nephroprotective (antiproteinuric) effect in diabetic nephropathy?
    A. Angiotensin receptor blockers
    B. Diuretics
    C. Antiplatelet
    D. Antibiotics
    E. Ketoanalogues
20. Which group of diuretics is most indicated in the symptomatic treatment of edema in diabetic nephropathy?
    A. K-sparing diuretics
    B. Thiazide diuretics
    C. Loops diuretics
    D. The diuretic group has no importance in the effectiveness of the treatment
    E. Osmotic diuretics

Multiple Choice

21. Frequently, nephrotic syndrome in adults is caused by:
    A. Diabetic nephropathy
    B. Focal and segmental glomerulosclerosis
    C. Benign nephroangiosclerosis
    D. Chronic pyelonephritis
    E. Membrane glomerulonephritis
22. The risk factors involved in the occurrence of acute renal failure secondary to the administration of iodinated contrast agents are:
    A. Pre-existing chronic kidney disease
    B. Diabetic nephropathy
    C. Excessive quantities of contrast substance
    D. Hypovolemia
    E. Obesity
23. Proteinuria in diabetic nephropathy:

A. Bence-Jones protein
B. In later stages – macroalbuminuria
C. Made of high-molecular weight proteins
D. In early stages – microalbuminuria
E. It is always present

24. Which statements are FALSE regarding the etiological treatment of acute pyelonephritis in a diabetic patient:
    A. It starts before the harvest of the urine culture
    B. The results of urine culture are expected
    C. Initially empirical
    D. Parenteral therapy is more effective
    E. In all cases, antibacterial monotherapy is preferred
25. Which patient groups have an increased risk of developing chronic kidney disease?
    A. Patients with diabetes
    B. Patients with high blood pressure
    C. Patients with systemic diseases such as SLE
    D. Patients with a family history of renal disease
    E. Patients with seronegative spondylitis
26. Conditions commonly associated with chronic tubulointerstitial nephropathy are:
    A. Chronic viral hepatitis
    B. Diabetes
    C. Decompensated chronic tonsillitis
    D. Bladder-ureteral reflux
    E. Systemic vasculitis
27. General factors favoring urinary tract infection are:
    A. Diabetes
    B. Male sex
    C. Bladder-ureteral reflux
    D. Renal lithiasis
    E. Extreme ages (children, the elderly)
28. Local (reno-urinary) factors favoring urinary tract infection are:
    A. Renal lithiasis
    B. Diabetes
    C. Bladder-ureteral reflux
    D. Female sex
    E. Pregnancy
29. Which of the following groups have an increased risk of urinary tract infections:
    A. Pregnant women
    B. Kidney transplantation recipients
    C. Patients with renal lithiasis
    D. Men under 20 years
    E. Patients with diabetes
30. The formation of edema in nephrotic syndrome is explained by:
    A. Decreased plasma oncotic pressure
    B. Activation of the renin-angiotensin-aldosterone system
    C. Increased vasopressin secretion
    D. Installation of renal vein thrombosis
    E. In some cases, the primary retention of water and salt
31. The basic pathogenetic links that lead to proteinuria in the diabetic kidney are:

A. Reduction of the negative charge of the glomerular basement membrane
B. Alteration of the glomerular basement membrane by lysosomal folders
C. Glomerular hypertension
D. Reduction of plasma oncotic pressure
E. Hyperperfusion of renal glomeruli

32. Renal impairment in diabetes can be manifested by:
    A. Acute nephritic syndrome
    B. Nephrotic syndrome
    C. Asymptomatic urinary abnormalities
    D. Rapidly progressive nephritic syndrome
    E. Lack of changes
33. What symptoms are characteristic for diabetic nephropathy?
    A. High blood pressure
    B. Pain in the lumbar region
    C. Urinalysis changes
    D. Swelling
    E. Vesical tenesmus
34. Hemodynamic disorders of diabetic nephropathy are conditioned by:
    A. Hypervolemia
    B. Retention of sodium and water
    C. Hyperreninemia
    D. Increased concentration of prostaglandins
    E. Vascular spasm
35. The basic role in the pathogenesis of hypertension in diabetic kidney diseases is played by:
    A. Retention of sodium and water
    B. Increasing circulating blood volume and beating volume
    C. Renal artery constriction (vasorenal mechanism)
    D. Hyper catecholamine
    E. Increased cortisol levels in the blood
36. Which of the following causes can cause secondary glomerular nephropathy?
    A. Viral hepatitis B
    B. Diabetes mellitus
    C. Systemic lupus erythematosus
    D. Mesangial IgA storage
    E. β-hemolytic streptococcus
37. Which antihypertensive drug has an antiproteinuric effect, useful in the treatment of diabetic nephropathy?
    A. Angiotensin converting enzyme inhibitors
    B. Loops diuretics
    C. Central antihypertensives
    D. Angiotensin receptor blockers
    E. β-blockers
38. The modifiable risk factors for the progression of diabetic nephropathy are:
    A. Sex and weight
    B. Genetic factors
    C. Proteinuria
    D. High blood pressure
    E. Blood glucose and body weight

39. Risk factors that cannot be modified for the progression of diabetic nephropathy are:
    A. Sex
    B. Genetic factors
    C. Proteinuria
    D. Glycemia
    E. Age
40. What are the characteristics of decompensated diabetic nephropathy?
    A. Increased serum creatinine
    B. Decreased serum urea
    C. Decreased serum potassium
    D. Anemia
    E. Increased serum potassium
41. For the management of anemia in diabetic nephropathy:
    A. Administration of erythropoietin
    B. Intravenous iron administration
    C. Administration of conversion enzyme inhibitors
    D. Administration of potassium by bone
    E. Administration of direct renin inhibitors
42. What are the signs of hyperkalemia on ECG?
    A. The expanded QRS complex
    B. High T wave
    C. Increasing the PR interval
    D. Supraventricular tachycardia
    E. Deviation of the cardiac axis to the left
43. In order to slow the progression of diabetic nephropathy it is important to:
    A. Control blood pressure
    B. Reduce proteinuria
    C. Reduction of dietary protein intake
    D. Administer parenteral physiological solution
    E. Administer non-steroidal anti-inflammatory drugs
44. Which of the following drugs are considered the first line for the control of high blood pressure in patients with diabetic nephropathy:
    A. Angiotensin converting enzyme inhibitors
    B. Angiotensin receptor blockers
    C. Dihydropyridine calcium channel blockers (such as Amlodipine, Nifedipine)
    D. Diuretics as monotherapy
    E. Adrenergic α2 agonists - clonidine
45. Why angiotensin-converting-enzyme inhibitors are considered nephroprotective
    A. Reduce intraglomerular pressure through vasodilation of the efferent arteriole
    B. Reduce proteinuria
    C. Lower blood pressure values
    D. Reduce the formation of cytokines, such as TGF-β, which play a role in glomerulosclerosis
    E. Increase intraglomerular pressure
46. To what extent is it recommended to reduce protein intake in a diabetic kidney patient?
    A. At 0.8 g / kg / day + urinary losses
    B. It is not recommended to reduce protein intake in patients with chronic kidney disease and severe malnutrition
    C. At 1.5 g / kg / day + urinary losses

D. At 2.0 g / kg / day + urinary losses
E. At 3.0 g / kg / day + urinary losses

47. Why is it advisable to restrict the intake of NaCl in diabetic nephropathy?
    A. To optimize the anti-proteinuric effect of the inhibitors of the conversion enzyme of angiotensin, sartans and non-dihydropyridine calcium channel blockers
    B. To control blood pressure
    C. To reduce glucose uptake into proximal tubes
    D. To optimize the erythropoiesis process
    E. To reduce albuminuria
48. What are the main recommendations for slowing the progression of diabetic nephropathy?
    A. Blood pressure control
    B. Treatment with angiotensin converting enzyme inhibitors
    C. Reduction of proteinuria
    D. Blood glucose control
    E. Non-steroidal anti-inflammatory therapy
49. Which of the following sentences are true regarding SLGT2 inhibitors in diabetic patients?
    A. It has been proven to have a cardioprotective
    B. It has been proven to have a nephroprotective
    C. SGLT2 inhibitors promote the renal excretion of glucose
    D. SGLT2 inhibitors are contraindicated in diabetes mellitus
    E. SGLT2 inhibitors have a weight-loss effect

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50. What are the reasons of increased incidence of diabetic nephropathy?
    A. Increased incidence of type 2 diabetes mellitus
    B. Improved life expectancy for these patients
    C. Better access to end-stage renal disease care
    D. Exponential growth of the global population
    E. Less effective antidiabetic drugs
51. Which of the following are risk factors for the development and progression of diabetic nephropathy in type 1 and type 2 diabetes mellitus?
    A. Poor glycemic control
    B. Hypertension
    C. Female gender
    D. Low levels of uric acid in serum
    E. Anemia
52. Which of the following are risk factor for the development and progression of diabetic nephropathy in type 1 and type 2 diabetes mellitus?
    A. Smoking
    B. Male gender
    C. Socio-economic factors, esp. poverty
    D. Strict glycemic control
    E. Normal blood pressure
53. What are the first signs in diabetic nephropathy?
    A. Renal hypertrophy
    B. Renal hyperfiltration
    C. Increased glomerular filtration rate

D. Decreased kidney size
E. Severe proteinuria

54. What does hyperglycemia induce in the kidney?
    A. Stimulates mesangial cell matrix production and cell growth, leading to early glomerular enlargement.
    B. Advanced glycation end-product accumulates in the kidneys
    C. Stimulates production of erythropoietin
    D. Stimulates production of self-antibodies
    E. Inhibits the production of the renin in the kidney
55. Which of the following sentences are true regarding renin-angiotensin system (RAS) in diabetic nephropathy?
    A. Activation of local renal RAS, which promotes cell growth and matrix accumulation
    B. There is no benefit in inhibition of RAS with medication
    C. Angiotensin II generates reactive oxidative species and NPH oxidase in vascular smooth muscle and the kidney.
    D. Activation of RAS, leads to decrease of a decrease of angiotensin
    E. There is a benefit in RAS inhibition
56. Which of the following paths are induced by hyperglycemia in the kidney?
    A. Promotes excretion of potassium
    B. Stimulates mesangial cell matrix production and cell growth, leading to early glomerular enlargement
    C. Increases expression of glomerular TGF- ß
    D. Leads to activity of protein kinase C and hexosamine pathways
    E. Promotes secretion of urinary casts
57. Which of the following are included in the primary prevention of diabetic nephropathy?
    A. Improve glycemic control
    B. Control blood pressure
    C. Encourage weight loss
    D. Encourage exercise
    E. Encourage increased intake of sodium
58. Which of the following may require a kidney biopsy in a patient with diabetes mellitus?
    A. Rapidly deteriorating GFR, despite good blood pressure and glycemic control
    B. Symptoms or signs suggestive of a multisystem disorder
    C. Rapid onset, rapidly increasing proteinuria
    D. Suggestive signs and symptoms of diabetic nephropathy
    E. A long duration of diabetes mellitus with specific changes in the retina
59. Why it is recommended to start treating blood pressure with renin-angiotensin system (RAS) blockade in patients with diabetic nephropathy?
    A. RAS blockade reduce the risk of progression of microalbuminuria
    B. RAS blockade reduce the risk of myocardial infarction
    C. RAS blockade increase the GFR
    D. RAS blockade reduce risk of cardiovascular events
    E. RAS blockade reduce hyperkalemia
60. Why it is recommended to lower sodium intake in patients with diabetic nephropathy?
    A. A low-salt diet enhances the renoprotective effects of angiotensin receptor blockers
    B. A low-salt diet has been proven to lower the blood pressure
    C. A low-salt diet can reduce the serum cholesterol levels

D. A low-salt diet improves glomerular filtration rate on a short-term
E. A low-salt diet helps in the glycemic control

Renal involvement in systemic diseases

Single choice

1. What renal-urinary complication can appear in severe and long-term evolution of rheumatoid arthritis?
    A. Pyelonephritis
    B. Renal amyloidosis
    C. Nephrolithiasis
    D. Hydronephrosis
    E. Urethritis
2. Renal involvement in rheumatoid arthritis can manifest as:
    A. Glomerulonephritis
    B. Pyelonephritis
    C. Polycystic kidney
    D. Urate nephropathy
    E. Nephroptosis
3. Characteristic kidney modification in rheumatoid arthritis is:
    A. Bacteriuria
    B. Leukocyturia
    C. Proteinuria
    D. Rheumatoid nodules
    E. Hydronephrosis
4. Use of which drug in the treatment of rheumatoid arthritis could damage the kidneys?
    A. Methotrexate
    B. Prednisone
    C. NSAIDs
    D. Folic acid
    E. Hydroxychloroquine
5. Rheumatic diseases directly associated with renal involvement is:
    A. Osteoporosis
    B. Osteoarthritis
    C. Systemic lupus erythematosus
    D. Diabetes mellitus
    E. Acute post-streptococcal glomerulonephritis
6. The main urinary sign in lupus nephritis, according to R/EULAR, 2018 diagnostic criteria, is:
    A. High levels of serum creatinine
    B. Leukocyturia
    C. Proteinuria >0.5 g/24h
    D. Uraturia
    E. Bacteriuria
7. Select the adequate dosage of corticosteroids for a patient with severe lupus nephritis:
    A. 0.1–0.5 mg/kg/day
    B. 0.75 mg/kg/day
    C. 1.0-2.0 mg/kg/day
    D. 3.0-4.0 mg/kg/day
    E. >4 mg/kg/day
8. Which of following is <u>NOT</u> an immunological abnormality seen in lupus nephritis?
    A. Lymphopenia

B. Increased titer of anti-dsDNA antibodies
C. Antinuclear antibodies
D. Increased circulating immune complexes
E. Anti-Sm antibodies

9. Pulse-therapy in lupus nephritis include:
   A. Prednisone up to 1 mg/kg/day
   B. Methylprednisolone 500-1000 mg/day
   C. Azathioprine 100-150 mg/day
   D. Mycophenolate mofetil 150 mg/day
   E. Methotrexate 15 mg/week
10. Pulse-therapy in lupus nephritis include:
   A. Prednisone up to 1 mg/kg/day
   B. Azathioprine 100-150 mg/day
   C. Mycophenolate mofetil 150 mg/day
   D. Methotrexate 15 mg/week
   E. Cyclophosphamide 0,5-1g/m^2
11. Combined pulse-therapy in lupus nephritis include:
   A. Prednisone 30 mg/day + Methotrexate 15 mg/week
   B. Methylprednisolone 20 mg/day + Azathioprine 100 mg/day
   C. Prednisone 60 mg/day + Mycophenolate mofetil 150 mg/day
   D. Methylprednisolone 1000 mg/day + Cyclophosphamide 0,5-1g/m^2
   E. Methylprednisolone 32 mg/day + Plaquenil 200 mg/day.
12. What cytostatic drugs are more frequently used in lupus nephritis to induce remission?
   A. Methotrexate
   B. Azathioprine
   C. Vincristine
   D. Cyclophosphamide
   E. Hydroxychloroquine
13. Glucocorticoid treatment in lupus nephritis to maintain remission includes:
   A. Doses of 1-2 mg/kg/day divided in multiple administrations
   B. Single morning maintenance dose up to 10 mg/day of Prednisone
   C. Prednisone 1 mg/kg/day + Vincristine
   D. Pulse-therapy with methylprednisolone combined with Cyclophosphamide
   E. Methotrexate 15 mg/week
14. The treatment of lupus nephritis with cytostatic drug aims:
   A. Achieve remission
   B. Maintain remission
   C. Decrease of the risk of end stage chronic kidney disease
   D. All mentioned above
   E. None mentioned above
15. Renal involvement in systemic sclerosis is clinically manifested by:
   A. Malignant arterial hypertension
   B. Renal calculi
   C. Acute pyelonephritis
   D. Polycystic kidney
   E. Nephroptosis
16. Which of the following is hematologic sign of scleroderma renal crisis?
   A. Thrombocytopenia
   B. Proteinuria

C. Leukocyturia
D. Thrombocytosis
E. Oliguria or progressive anuria

17. The renal manifestations found in Microscopic Polyangiitis are the following, EXPT:
    A. Rapidly progressive glomerulonephritis
    B. Hematuria
    C. Decrease in eGFR
    D. Palpable purpura
    E. Proteinuria
18. Which of the following vasculitis is associated with IgA-nephropathy?
    A. Polyarteritis nodosa (PAN)
    B. Takayasu arteritis (TA)
    C. Granulomatosis with polyangiitis (Wegener)
    D. IgA vasculitis (Henoch-Schönlein purpura)
    E. Cryoglobulinemic vasculitis associated with viral hepatitis HCV
19. All of the following are signs of renal involvement in ANCA–associated vasculitis, EXPT:
    A. Edema
    B. Oliguria
    C. Livedo reticularis
    D. Renal failure
    E. Hematuria
20. Which of the following pathogenetic mechanisms is NOT characteristic for glomerulonephritis in polyarteritis nodosa?
    A. Proliferative segmental or diffuse glomerulonephritis
    B. Development of a chronic inflammatory process in the vessel wall
    C. Fibrinoid necrosis of the interlobular and arcuate arteries
    D. Granuloma formation
    E. Necrotizing glomerulonephritis with extra-capillary proliferation
21. Which is the most characteristic renal involvement in IgA deposit vasculitis (Henoch – Schönlein)?
    A. IgA nephropathy (IgA antibodies anti-α galactosyl).
    B. Granuloma formation
    C. Fibrinoid necrosis of the interlobular and arcuate arteries
    D. Tubulointerstitial nephritis
    E. Pyonephrosis
22. Which of the following characterizes Goodpasture syndrome?
    A. Fibrinoid necrosis of the interlobular and arcuate arteries
    B. Glomerular involvement mediated by anti-GBM antibodies
    C. IgA nephropathy
    D. Paucci-immune glomerulonephritis
    E. Tubulointerstitial nephritis
23. In young women, glomerulonephritis, mostly is a manifestation of:
    A. Dermatomyositis
    B. Systemic lupus erythematosus
    C. Systemic sclerosis
    D. Henoch-Schönlein purpura
    E. Rheumatic Polymyalgia
24. Goodpasture syndrome could manifest with following signs, EXPT:
    A. Recurrent episodes of hemoptysis

B. Progressive renal failure
C. Proteinuria
D. Pyuria
E. Basal pulmonary infiltrates

25. Which of following is the characteristic for Goodpasture syndrome?
    A. ANA antibodies
    B. Serum anti-GBM antibodies
    C. ANCA antibodies
    D. Anti-dsDNA
    E. Anti-U1-RNP
26. Lupus nephritis could manifest with following:
    A. Acute nephritis syndrome
    B. Nephrotic syndrome
    C. Hematuria
    D. All of the above
    E. None of the above
27. Which of the following conditions could be associated with glomerulonephritis?
    A. Osteoporosis
    B. Fibromyalgia
    C. Systemic lupus erythematosus
    D. Multiple myeloma
    E. Gout
28. Suspicion of vasculitis in patient with glomerulonephritis is needed when patient presents following:
    A. Palpable purpura
    B. Pulmonary hemorrhage
    C. Involvement of ENT organs
    D. All of the answers are correct
    E. None of the above

Multiple Choice

29. Renal disorders related to rheumatoid arthritis and its complications are?
    A. Membranous Nephropathy
    B. Pyelonephritis
    C. Focal mesangial proliferative glomerulonephritis
    D. Amyloidosis
    E. Persistent inflammatory synovitis
30. Use of which drugs in the treatment of rheumatoid arthritis could damage kidneys?
    A. NSAIDs
    B. Methotrexate
    C. Prednisone
    D. Gold salts
    E. D-penicillamine
31. Rheumatic diseases that could cause kidney damage are:
    A. Rheumatoid arthritis
    B. Osteoarthritis
    C. Systemic lupus erythematosus
    D. Systemic vasculitis
    E. Osteoporosis
32. Renal impairment in ankylosing spondylitis can be presented by:

A. Chronic pyelonephritis
B. Acute kidney injury
C. IgA nephropathy
D. Fanconi syndrome
E. Renal amyloidosis

33. Select the extra – renal manifestation of lupus nephritis:
    A. Proteinuria
    B. Hematuria
    C. Malar rash
    D. Nephrotic syndrome
    E. Mucosal lesions
34. Which type of renal impairment are included in ISN/RPS -2003 classification of lupus nephritis?
    A. Minimal mesangial nephritis
    B. Mesangial-proliferative nephritis
    C. Anti-GBM glomerulonephritis
    D. Diffuse sclerotic (>90% sclerotic glomeruli) nephritis
    E. Fibrinoid necrosis of the interlobular and arcuate arteries
35. Which of following are immunological abnormalities seen in lupus nephritis?
    A. Lymphopenia
    B. Increased titer of anti-dsDNA antibodies
    C. Antinuclear antibodies
    D. Increased ESR
    E. Thrombocytopenia
36. The treatment of lupus nephritis includes following drugs:
    A. Prednisone
    B. Cyclophosphamide
    C. Mycophenolate mofetil
    D. Azathioprine
    E. Febuxostat
37. What cytostatic drugs are more frequently used in lupus nephritis to maintain remission?
    A. Methotrexate
    B. Azathioprine
    C. Mycophenolate mofetil
    D. Cyclophosphamide
    E. Hydroxychloroquine
38. Cytostatic immunosuppressive drugs recommended in the treatment of lupus nephritis are:
    A. Cyclophosphamide
    B. D-penicillamine
    C. Azathioprine
    D. Mofetil mycophenolate
    E. Vincristine
39. The remission maintenance treatment of lupus nephritis includes:
    A. Prednisolone 70-80 mg/day
    B. Prednisolone 5-10 mg/day
    C. Azathioprine 150 mg/day
    D. Methotrexate 15 mg/week

E. Cyclophosphamide 1 gram i/v once every 2-3 months

40. Which of the following are signs and symptoms of renal involvement in systemic sclerosis?
    A. Hydronephrosis
    B. Proteinuria
    C. Marked leukocyturia
    D. Arterial hypertension
    E. Oliguria or progressive anuria
41. Which of the following are risk factor of scleroderma renal crisis?
    A. Leukocyturia
    B. Corticosteroid use
    C. Diffuse skin disease
    D. Presence of anti-RNA polymerase antibodies
    E. Limited skin disease
42. Which of the following manifestations are characteristic for nephritis in microscopic polyangiitis?
    A. Positive test for MPO-ANCA
    B. Oliguria
    C. Mononeuritis multiplex
    D. Proteinuria
    E. Hematuria
43. Which of the following clinical manifestations are found in Goodpasture syndrome (anti-glomerular basement membrane disease)?
    A. Microhematuria
    B. Subnephrotic proteinuria
    C. Mononeuritis multiplex
    D. Arterial hypertension
    E. Progressive renal failure
44. In the treatment of secondary glomerulonephritis are used:
    A. Methylprednisolone
    B. Amoxicillin
    C. D-penicillamine
    D. Cyclophosphamide
    E. Azathioprine
45. Which of the following are correct affirmations for IgA nephropathy?
    A. Nephrotic syndrome develops in majority patients
    B. Asymptomatic hematuria is frequent sign
    C. Children <10 years old are more common affected
    D. Deposits of IgA in glomerular mesangium are found
    E. Time relationship with streptococci infections
46. What antibodies can be found in the serum of patients in rapidly progressive glomerulonephritis due to small vessel vasculitis?
    A. ANCA-MPO
    B. ANCA-PR3
    C. Rheumatoid factor
    D. Anti-Phospholipase A2 Receptor Antibody
    E. Anti-HBs antibody
47. In a patient with suspected ANCA-associated vasculitis, which of the following investigations should be performed?

A. Testing for ANCA binding pattern
B. Urinalysis
C. Autoimmune serology, i.e. anti-GBM, anti-dsDNA
D. Chest CT
E. Dual-energy X-ray absorptiometry (DXA)

48. Which disease can manifest with scleroderma renal crisis?
    A. Systemic lupus erythematosus
    B. Systemic sclerosis
    C. Multiple sclerosis
    D. Rheumatoid arthritis
    E. ANCA-associated vasculitis
49. Which sentences are true regarding scleroderma renal crisis?
    A. A syndrome of acute kidney injury with increased blood pressure
    B. Progression to end-stage renal disease quite often (up to 50%)
    C. It is a complication of rheumatoid arthritis
    D. E-inhibitors are the mainstay of therapy
    E. Biopsy of the kidney is necessary to assess prognostic information

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50. Which of the following can be the cause of renal amyloid?
    A. Rheumatoid arthritis
    B. Chronic inflammatory disease, such as rheumatoid arthritis, psoriatic arthritis
    C. Chronic infections, such as TB, osteomyelitis
    D. Malignancies, such as renal cell carcinoma, lymphoma
    E. Acute infections, such as acute urinary tract infections, pneumonia
51. Which of the following tests should be performed on a regular intervals in a patient with systemic lupus erythematous?
    A. Urinalysis with examination of urinary sediment (looking for hematuria and cellular casts)
    B. Estimation of urine protein excretion
    C. Serum creatinine and estimated glomerular filtration rate
    D. MRI of the kidneys with medium contrast
    E. CT urography
52. Why it is important to perform a kidney biopsy in patients lupus nephritis?
    A. The treatment is guided by the histologic subtype
    B. The kidney biopsy is cheap, and no extra costs will be required
    C. The clinical presentation may not accurately reflect the severity of the histological findings
    D. Kidney biopsy can help us in assessing extrarenal involvement in lupus
    E. The kidney biopsy is easy to perform and interpret, there is no need for skilled personnel
53. Which of the following immunological tests can be found in a patient with lupus nephritis?
    A. Antinuclear antibodies
    B. Anti-dsDNA
    C. Low C3 and C4
    D. Increased C-reactive protein
    E. Antineutrophil Cytoplasmic Antibodies
54. Which of the following treatment phases are used when treating ANCA-associated vasculitis with renal involvement?

A. Induction of remission
B. Maintenance of remission
C. Treatment of relapse
D. Induction of relapse
E. Acute treatment

55. Which arteries are affected most often in polyarteritis nodosa?
    A. Renal arteries
    B. Aorta
    C. Interlobar arteries
    D. Arcuate arteries
    E. Glomerular capillary
56. Which of the following can be affected in IgA vasculitis (Henoch-Schönlein purpura)?
    A. Skin
    B. Joints
    C. Kidneys
    D. Lungs
    E. Central nervous system