

Renal pathology (cases & MSQs)

The most common cause of nephrotic syndrome in paediatrics population is (A)

- A) Minimal change disease
- B) Mesangial proliferation
- C) Focal segmental glomerulosclerosis
- D) Membranous nephropathy
- E) membranoproliferative glomerulonephritis

Below are the characteristic features of nephrotic syndrome EXCEPT (C)

- A) Proteinuria more than 40mg/m²/hour
- B) Hypoalbuminaemia
- C) gross haematuria
- D) Oedema
- E) Hyperlipidaemia

A 52-year-old Caucasian male presents with sinus pain and drainage, bloody nasal discharge, and nasal mucosal ulceration. On laboratory examination, the man is found to have proteinuria, hematuria, and red blood cell casts. A biopsy of the upper airway tissue reveals granulomatous inflammation with necrosis. Renal biopsy confirms the existence of glomerulonephritis. Blood tests show the presence of antineutrophil cytoplasmic antibodies (c-ANCA). What is the most likely diagnosis? (E)

- A. Allergic angitis
- B. Goodpasture's syndrome
- C. Non-infectious granulomatous disease
- D. Tumors of the upper airway
- E. Wegener's granulomatosis

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A 3-year-old boy with an enlarging, left-sided, abdominal mass undergoes diagnostic biopsy. The tumor reveals a variety of cellular patterns: dense immature islands of epithelial cells, ribbons of spindled fibroblast-like stromal cells, and poorly formed tubular structures. This triphasic histology is most suggestive of which of the following childhood neoplasms? (E)

- A. Embryonal rhabdomyosarcoma
- B. Ewing's sarcoma
- C. Hodgkin's disease
- D. Neuroblastoma
- E. Wilms' tumor

Question-B

A clinical study is performed with pediatric subjects who had minimal change disease. These patients are observed to have prominent periorbital edema. Laboratory test findings from serum and urine tests are analyzed. Which of the following laboratory test findings is most likely to be consistently present in these subjects?.

- A ☐ Nitrite positive urinalysis specimen
 - B ☐ Proteinuria >3.5 gm/24 hours
 - C ☐ Hematuria with >10 RBC/hpf
 - D ☐ Lipiduria in association with hypercholesterolemia
 - E ☐ Renal tubular epithelial cells and casts
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Question-C ----

A 12-year-old boy is a member of a family with a history of renal disease, with males more severely affected than females. He is found to have auditory nerve deafness, corneal dystrophy, and ocular lens dislocation. A urinalysis shows microscopic hematuria. A renal biopsy is performed. Microscopically, the glomeruli show glomerular capillaries with irregular basement membrane thickening and attenuation with splitting of the lamina densa. The mesangial matrix is increased and epithelial cells may appear foamy. Which of the following is the most likely diagnosis?

- A ☐ Goodpasture syndrome
- B ☐ IgA nephropathy
- C ☐ Alport syndrome
- D ☐ Dominant polycystic kidney disease
- E ☐ Diabetes mellitus, type I

Question-D

A 3-year-old child has become more irritable over the past two months and does not want to eat much at meals. On physical examination the pediatrician notes an enlarged abdomen and can palpate a mass on the right. An abdominal CT scan reveals a 10 cm solid mass involving the right kidney. The resected mass has a microscopic appearance with sheets of small blue cells along with primitive tubular structures. The child receives chemotherapy and radiation therapy, and there is no recurrence. Which of the following neoplasms is this child most likely to have had?

- A ☐ Angiomyolipoma
- B ☐ Renal cell carcinoma
- C ☐ Urothelial carcinoma
- D ☐ Wilms tumor
- E ☐ Medullary fibroma

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Question-D

A clinical study is performed involving subjects with glomerulonephritis. One group of subjects has a diagnosis of crescentic glomerulonephritis and another group has membranous glomerulonephritis. Which one of the following laboratory findings is most likely to be found in the absence of other findings in subjects with membranous glomerulonephritis?

- A ☐ Rapid onset
- B ☐ Red blood cell casts
- C ☐ Oliguria
- D ☐ Albuminuria
- E ☐ Hypertension

Question-A

A 50-year-old man is hospitalized for acute myocardial infarction. He has decreased cardiac output with hypotension requiring multiple pressor agents. His urine output drops over the next 3 days. His serum urea nitrogen increases to 59 mg/dL, with creatinine of 2.9 mg/dL. Urinalysis reveals no protein or glucose, a trace blood, and numerous hyaline casts. Five days later, he develops polyuria and his serum urea nitrogen declines. Which of the following pathologic findings in his kidneys is most likely to have caused his azotemia?

- A ☐ Patchy tubular necrosis
- B ☐ Fusion of podocyte foot processes
- C ☐ Glomerular crescents
- D ☐ Hyperplastic arteriolosclerosis
- E ☐ Mesangial immune complex deposition

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Question-C

A 43-year-old man goes to his physician for a routine check of his health status. He is found to have a blood pressure of 150/95 mm Hg. His urinalysis shows pH 6.5, specific gravity 1.015, no glucose, blood, or protein, and no casts. His serum creatinine is 1.4 mg/dL. If he is not treated, which of the following conditions will most likely cause his death?

- A ☐ Intracerebral hemorrhage (stroke)
- B ☐ Aortic aneurysm rupture
- C ☐ Congestive heart failure
- D ☐ Chronic renal failure
- E ☐ Intracranial aneurysm rupture

Question-B

A 60-year-old woman is admitted with sudden onset of chest pain and is diagnosed with an acute myocardial infarction. There is difficulty maintaining adequate blood pressure and tissue perfusion for 3 days. Her serum lactate becomes elevated. Her serum urea nitrogen and creatinine are noted to be increasing. Granular and hyaline casts are present on microscopic urinalysis. Which of the following renal lesions is most likely to be present in this situation?

- A ☐ Chronic pyelonephritis
- B ☐ Acute tubular necrosis
- C ☐ Nodular glomerulosclerosis
- D ☐ Renal vein thrombosis
- E ☐ Minimal change disease

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Question-A

A 15-year-old girl has had increasing lethargy following a bout of the "flu" 3 weeks ago. On physical examination there are no abnormal findings. Her condition does not improve after 3 weeks on corticosteroid therapy, so a renal biopsy is performed. Microscopic examination shows segmental sclerosis of 3 of 10 glomeruli identified in the biopsy specimen. Immunofluorescence studies and electron microscopy do not show immune deposits. What is the most appropriate advice to give the girl's parents regarding her condition?

- A ☐ She may require a renal transplant in 10 years
- B ☐ She will probably improve with additional corticosteroid therapy
- C ☐ She will likely develop a restrictive lung disease
- D ☐ She has an underlying malignancy
- E ☐ She will improve if she loses weight

Question-B

A clinical study is performed with subjects born with congenital urinary tract anomalies to assess the development of long term complications. One group of subjects is found to have an increased risk for development of a carcinoma. Which of the following congenital anomalies is most likely to carry this risk?

- A ☐ Unilateral renal agenesis
- B ☐ Bladder exstrophy
- C ☐ Bilateral ureteral duplication
- D ☐ Horseshoe kidney
- E ☐ Medullary sponge kidney

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Question-E

A 25-year-old G3 P2 woman has felt no fetal movement by 18 weeks gestation. Fetal ultrasound scan reveals the lack of amniotic fluid, making imaging difficult, but bilaterally asymmetrically enlarged fetal kidneys are seen. No fetal bladder can be visualized. The fetal heart appears to have four chambers, and the feet have marked varus deformities. At the time of birth at 36 weeks gestation, the neonate has severe respiratory difficulty. Which of the following is the most likely diagnosis?

- A ☐ Bilateral Wilms tumor
- B ☐ Dominant polycystic kidney disease
- C ☐ Urethral atresia
- D ☐ Hypospadias
- E ☐ Multicystic renal dysplasia

Question-C

A 30-year-old man has noted puffiness around his eyes and swelling of his feet for the past 2 weeks. On physical examination his blood pressure is 155/95 mm Hg. Urine microscopic examination reveals oval fat bodies. Which of the following conditions is he most likely to have?

- A ☐ Ascending pyelonephritis
- B ☐ Nephritic syndrome
- C ☐ Nephrotic syndrome
- D ☐ Obstructive uropathy
- E ☐ Renal infarction
- F ☐ Papillary necrosis

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Question -A

A 5-year-old child has been noted by his mother to be lethargic for 2 weeks. On physical examination he has periorbital edema. He is afebrile. Dipstick urinalysis reveals no glucose, ketones, or blood, but he has 4+ proteinuria present. Microscopic urinalysis reveals no casts, but oval fat bodies are seen. He is treated with corticosteroid therapy and his condition improves. Which of the following renal electron micrographic findings is most characteristic for this child's disease?

- A ☐ Fusion of foot processes
- B ☐ Subepithelial electron dense deposits
- C ☐ Duplication of glomerular capillary basement membranes
- D ☐ Irregular thickening of the glomerular basement membranes
- E ☐ Mesangial cell proliferation