

YR 2 URINARY TRACT UNIT EXAM -- March 13, 1998.

CHOOSE THE SINGLE BEST ANSWER FOR QUESTIONS 1 - 80.

1. In which one of the following varieties of glomerulonephritis are glomeruli normocellular?
 - A. Membranous glomerulonephritis
 - B. Acute post-streptococcal glomerulonephritis
 - C. Crescentscentic glomerulonephritis
 - D. Diffuse proliferative lupus glomerulonephritis

2. A 35 year old woman had had no urine output for the past 72 hours. She was found to have cancer of the uterine cervix a year ago and was treated with cervical irradiation. Her bladder was not distended and renal ultrasonogram revealed bilateral hydronephrosis. Which of the following statements is TRUE?
 - A. Upon release of the obstruction, glomerular filtration rate and renal blood flow will return to normal immediately.
 - B. The response of collecting tubules to aldosterone is normal.
 - C. Some degree of post obstructive diuresis can be anticipated.
 - D. The response of her collecting tubules to vasopressin is normal.

3. Which of the following is TRUE regarding potassium homeostasis?
 - A. Extracellular potassium stores are greater than intracellular stores
 - B. 90% of ingested daily potassium appears in the urine
 - C. Most of the body's potassium is stored in the bone
 - D. Intracellular potassium cannot enter the extracellular space

4. A 74 year old patient from a local nursing home is brought to our office for evaluation because of increasing lethargy and confusion. The patient was recently found to have small cell carcinoma of the lung. Two weeks ago, he was alert and could give a reliable, complete history. His weight was 50 kg. Today he only opens his eyes but does not respond appropriately to questions or stimuli. He is unable to stand on a scale to be weighed. Pulse 70 bpm, blood pressure 118/80 mm Hg, respirations 18 per minute, temperature 99°F.

Laboratory parameters two weeks ago:

plasma [Na] = 140 meq/L
plasma glucose = 135 mg/dL
BUN = 14 mg/dL
creatinine = 0.6 mg/dL
plasma osmolality = 293 mosm/kgH₂O

Laboratory studies today:

plasma [Na] = 110 meq/L
plasma glucose = 90 mg/dL
BUN = 7 mg/dL
creatinine = 0.6 mg/dL
plasma osmolality = 230 mosm/kgH₂O
urine [Na] = 50 meq/L
urine osmolality = 345 mosm/kgH₂O
urine output over 24 h = 1 liter

Which of the following most closely represents the change in body water?

- A. 0.5 liter total body water excess
- B. 1.5 liters total body water deficit
- C. 6.4 liters total body water excess
- D. 8.2 liters total body water excess

5. A 25 year old intravenous heroin abuser, presents with 9 grams of protein in a 24 hour urine collection, an elevated serum cholesterol and hypoalbuminemia. His creatinine is 3.8 mg/dL. The most likely finding on renal biopsy is:
- A. Normal histologically appearing glomerular capillary loops. Podocyte foot process fusion on electron microscopy.
 - B. Focal and segmental glomerular consolidation and sclerosis.
 - C. Thickened glomerular capillary loops with immune deposits occurring subepithelially forming a "toothcomb" pattern.
 - D. Mesangial hypercellularity with immune complex deposition in mesangial area.
6. Which of the following diuretics does not directly inhibit active Na^+ transport?
- A. Furosemide
 - B. Mannitol
 - C. Acetazolamide
 - D. Hydrochlorothiazide
7. The most common site of distant metastasis for prostate cancer is:
- A. Bone
 - B. Lung
 - C. Liver
 - D. Brain
8. The glomerular reaction by which the entire capillary tuft may be compressed from the urinary space is called:
- A. Endocapillary cell acute proliferation
 - B. Membranoproliferative
 - C. Mesangial proliferative
 - D. Crescentic

9. A comatose 3 year old child is brought to the emergency room. The mother is frantic. She found her child had ingested at least 15 aspirin. The child is unresponsive, has a BP of 80/40 mmHg, pulse 70 bpm.

Arterial blood gases: pH 7.39
 pCO₂ 12 mmHg
 pO₂ 100 mmHg

plasma [Na] = 140 mEq/L
plasma [K] = 4.0 mEq/L
plasma [Cl] = 105 mEq/L
total venous CO₂ content = 7 mEq/L

You determine that the child has a:

- A. Metabolic acidosis with an increased anion gap, with appropriate compensation
 - B. Chronic respiratory alkalosis, with appropriate compensation
 - C. Metabolic acidosis with increased anion gap, not appropriately compensation
 - D. Metabolic acidosis with normal anion gap, not appropriately compensated
10. Pre-renal acute renal failure may result from which of the following?
- A. Crescentic GN
 - B. Rhabdomyolysis
 - C. Hemorrhage
 - D. Gentamycin
11. Serum C3 level would remain normal in:
- A. Acute post-streptococcal glomerulonephritis
 - B. Crescentic glomerulonephritis associated with acute bacterial endocarditis
 - C. Minimal change glomerulopathy
 - D. Diffuse proliferative glomerulonephritis of S.L.E.

12. Dialysis is indicated for irreversible untreatable consequences of advanced chronic renal failure. All of the following patients have chronic renal failure. Which patient needs to start on dialysis immediately?
- A. A type 2 diabetic with a nonanion gap metabolic acidosis or serum creatinine of 4 mg/dL and a potassium of 6.2 mEq/L
 - B. A 38 year old man with a creatinine of 10 mg/dL
 - C. A 67 year old female with a creatinine of 8 mg/dl and asterxsis and confusion
 - D. A 50 year old man with a creatinine of 7.4 mg/dl and progressively worsening peripheral edema
13. Which of the following diuretic agents would be most useful in treating hypercalcemia?
- A. Furosemide (Lasix)
 - B. Acetazolamide (Diamox)
 - C. Hydrochlorothiazide (Hydrodiuril)
 - D. Spironolactone (Aldactone)
14. In acute unilateral ureteral obstruction, which of the following statements is TRUE?
- A. Retention of nitrogenous wastes such as BUN and serum creatinine can be anticipated
 - B. Retention of potassium resulting in life threatening hyperkalemia can be anticipated
 - C. Post obstructive water and sodium diuresis can be anticipated after the release of the obstruction
 - D. Renin-angiotensin system is activated and is responsible for acute hypertension

15. The histological Gleason grading system used in prostate cancer is based on:
- A. Nuclear pleomorphism
 - B. The presence of nucleoli
 - C. The growth pattern
 - D. Number of mitoses
16. Which of the following would have the greatest effect on movement of potassium between the intracellular and extracellular compartments?
- A. Lactic acidosis
 - B. Ketoacidosis
 - C. Inorganic acidosis
 - D. Hyperphosphatemia
17. In the kidney, ammonium ion (NH_4^+)
- A. Is reabsorbed by the descending limb of Henle
 - B. Is secreted via the H^+/NH_4^+ exchanger in the apical membrane of the proximal tubule
 - C. Production is inhibited by low blood pH
 - D. Production is stimulated by low plasma $[\text{K}^+]$ (potassium)
18. A 60 year old woman who has acute renal failure post cholecystectomy has the following lab values. Urine sodium 20 mEq/l, urine creatinine 80 mg/dl, serum sodium 140 mEq/l, serum creatinine 3.0 mg/dl. Which of the following is the most likely etiology of his acute renal failure?
- A. Pre-renal acute renal failure
 - B. Urinary tract obstruction
 - C. Acute tubular necrosis
 - D. Drug-induced interstitial nephritis

19. "Nephritic edema" is most characteristically associated with:
- A. Fatty casts
 - B. Granular casts
 - C. RBC casts
 - D. Broad brown casts
20. Which of the following would result in acute renal failure?
- A. Right renal artery thrombosis
 - B. A left ureteral calculus
 - C. Bladder neck obstruction
 - D. A clot completely obstructing the right ureter
21. The most active hormone on prostate cell growth is:
- A. Testosterone
 - B. Dihydrotestosterone
 - C. LHRH
 - D. Epiandrostanedione
22. Tubular transport of potassium along the nephron is characterized by:
- A. About 70% of filtered potassium is absorbed in the proximal tubule
 - B. More than 70% of filtered potassium is absorbed in the proximal tubule when potassium depletion is present
 - C. Potassium secretion occurs in the loop of Henle
 - D. The kidney is unable to conserve potassium

23. In patients with metastatic prostate cancer, the best initial therapy is:
- A. Hormonal therapy
 - B. Radiation to the metastatic areas
 - C. Chemotherapy
 - D. Combination of hormone and chemotherapy
24. Metabolic alkalosis:
- A. Can be generated by severe potassium (K^+) depletion due to inhibition of ammonium production
 - B. Is saline unresponsive if the urinary $[Cl^-]$ is < 20 mEq/L
 - C. Caused by vomiting is often maintained by volume depletion leading to enhanced Na^+ reabsorption
 - D. Is compensated by hypoventilation such that the rise in pCO_2 is twice the rise in plasma bicarbonate
25. Abnormality resulting from urinary tract obstruction by a left ureteral stone:
- A. Hyperchloremia and hyperkalemic metabolic acidosis
 - B. Elevated BUN and serum creatinine
 - C. Hypertension
 - D. Polyuria
26. Which of the following might raise extracellular fluid potassium concentration?
- A. Insulin
 - B. Catecholamines
 - C. Exercise
 - D. Metabolic alkalosis

27. Under normal circumstances, the glomerular ultrafiltrate does not pass through the:
- Slit diaphragms
 - endothelial fenestrae
 - Peripheral portion of the GBM
 - "Waist" region of the GBM
28. Which of the following is the most characteristic feature of a nephrotic urinary sediment?
- Fatty cast
 - RBC cast
 - WBC cast
 - Epithelial cast
29. A 30 year old diabetic man comes to see you for a routine office visit. He is awake and has been feeling quite well, His blood pressure is 120/80 mm Hg, heart rate is 90 bpm, respiratory rate 20 per min, temperature 98°F. He weighs 65 kg. The remainder of his physical exam is unremarkable.

You obtained laboratory studies and receive the results the next day.

Plasma [Na] 125 meq/L	plasma glucose = 130 mg/dL
Plasma [K] = 3.5 meq/L	plasma osmolality = 288 mosm/kgwater
Plasma [Cl] = 90 meq/L	
Plasma HCO ₃ = 25 meq/L	triglycerides = 1,250 mg/dL
BUN 14 mg/dL	cholesterol = 430 mg/dL
creatinine = 0.9 mg/dL	

His hyponatremia:

- Is due to fluid shifts from the intracellular to extracellular compartment
- Is due to impaired urinary dilution
- May cause brain herniation
- Is artifactual

30. The area of the prostate from which most cancers arise is the:
- A. Transitional zone
 - B. Central zone
 - C. Peripheral zone
 - D. Anterior
31. The MOST likely cause of azotemia in a 60 year old man with a palpable bladder is:
- A. Retroperitoneal lymphoma
 - B. Benign Prostatic hypertrophy
 - C. Bilateral papillary necrosis
 - D. Lodging of a calculus in the right ureter
32. Aldosterone increases distal nephron bicarbonate reabsorption by:
- A. Stimulating Na^+ reabsorption by the intercalated cell
 - B. Stimulating H^+ secretion by the intercalated cell
 - C. Increasing Na^+/H^+ exchange in the apical membrane of the intercalated cell
 - D. Generating a lumen positive (vs cell) voltage in the distal nephron
33. In a two-kidney individual, unilateral renal disease may be seen in:
- A. Analgesic associated nephropathy
 - B. Acute allergic interstitial nephritis
 - C. Berger's disease
 - D. Chronic interstitial nephritis
 - E. Acute ascending pyelonephritis

34. A 63 year old man has a chest x-ray performed as part of an insurance examination. The x-ray shows multiple osteoblastic lesions in the ribs. The test most likely to result in a definitive diagnosis is:
- A. Cystoscopy with bladder biopsy
 - B. CT (computerized tomography) scan of the kidneys
 - C. Transrectal ultrasound with biopsy of the prostate gland
 - D. Intravenous pyelogram
 - E. Ultrasound of the testes
35. A 44 year old man sees you in your office because of weakness and headaches. Other than treatment for high cholesterol with cholestyramine, he had no other complaints. His BP is 170/90 mmHg and his pulse is 68 bpm. Weight is 80 kg. Fundoscopic exam shows retinal changes consistent with hypertension. Cardiopulmonary exam is normal. He has no edema. You obtain the following laboratory results:
- | | |
|---|------------------------------|
| plasma [Na] = 143 mEq/L | serum glucose = 100 mg/dl |
| plasma [K] = 3.3 mEq/L | serum creatinine = 1.0 mg/dL |
| plasma [Cl] = 100 mEq/L | BUN = 18 mg/dl |
| total venous CO ₂ = 32 mEq/L | |
- Arterial Blood Gas: pH 7.47 pCO₂45 pO₂95
- Urine [Na] = 30 mEq/L
Urine [K] = 20 mEq/L
Urine [Cl] = 40 mEq/L
- The most likely diagnosis is:
- A. Chronic renal failure
 - B. Villous adenoma
 - C. Primary hyperaldosteronism
 - D. Primary hyperparathyroidism
 - E. Cholestyramine-induced acid base disturbance

36. In children with glomerular disease, the best prognosis may be expected in:
- A. Focal segmental glomerulosclerosis
 - B. Acute post streptococcal glomerulonephritis
 - C. Crescentic glomerulonephritis
 - D. Diffuse proliferative glomerulonephritis of SLE
 - E. Nodular diabetic glomerulosclerosis
37. A 30 year old man is referred to you after proteinuria was noted on a urinalysis. Several random urinalyses shows 2+ protein on dipstick but no other abnormalities. His serum creatinine is 0.9 mg/dL and his blood pressure is 120/80 mmHg. Several urine specimens collected on first morning void after a full nights sleep are negative for protein. Your next step is to:
- A. Order a 24 hour urine collection for protein and creatinine.
 - B. Order a dye contrast radiographic study (IVP)
 - C. Schedule a kidney biopsy
 - D. Reassure him that his prognosis is benign
 - E. Educated him on the natural history of chronic glomerular disease and start him on a low protein diet.
38. The Fanconi syndrome is characteristic of dysfunction of the:
- A. Glomeruli
 - B. Distal convoluted tubules
 - C. Proximal convoluted tubules
 - D. Cortical collecting tubules
 - E. Medulla

39. A 62 year old man presents with an episode of gross hematuria. At cystoscopy the urologist sees an exophytic tumor with papillary fronds on the posterior wall. The most likely histologic diagnosis is:
- A. Squamous cell carcinoma
 - B. Transitional cell carcinoma
 - C. Inverted papilloma
 - D. Adenocarcinoma
 - E. Small cell carcinoma
40. Which of the following is an indication for dialysis in patients with acute renal failure?
- A. Hypocalcemia
 - B. Anemia
 - C. Hyperphosphatemia
 - D. Fluid overload
 - E. Hyperuricemia
41. Acute pyelonephritis caused by which of the following bacteria is most likely to result in (struvite) stone formation in the ipsilateral urinary tract:
- A. E. coli
 - B. Pseudomonas
 - C. Staphylococcus
 - D. Klebsiella
 - E. Proteus

42. The amount of solute free water (free water clearance, C_{H_2O}) that the kidney excretes increases as:
- A. Osmolal clearance increases
 - B. Antidiuretic hormone increases
 - C. The urine osmolality decreases
 - D. The urine flow decreases
 - E. Plasma osmolality increases
43. The most common kidney tumor of childhood is:
- A. Rhabdomyosarcoma
 - B. Clear cell carcinoma
 - C. Wilms' tumor
 - D. Oncocytoma
 - E. Osteosarcoma
44. Which of the following would most likely be associated with hypokalemia?
- A. Thrombocytosis
 - B. Renal failure
 - C. Aldosterone deficiency
 - D. Laxatives
 - E. Peaked T waves on the EKG
45. Which of the following is not located in the renal medulla?
- A. Vasa recta
 - B. Medullary rays
 - C. Loops of Henle of deep nephrons
 - D. Medullary collecting ducts
 - E. Papillary duct orifices

46. A 60 year old diabetic woman presents with nausea, occasional vomiting and increased fatigue. Her creatinine is 6.0 mg/dL. You need to decide if she has severe enough renal disease to account for her symptoms. Knowing that a GFR of approximately 10 cc/min or less usually is associated with the need for dialysis you collect a 24 hr urine and calculate her creatinine clearance. Her urine results are as follows: Creatinine 900mg/24 hr. Which of the following most likely reflects her creatinine clearance?
- A. 50 cc/min
 - B. 40 cc/min
 - C. 30 cc/min
 - D. 20 cc/min
 - E. 10 cc/min
47. A comatose man in his mid 50's is brought to the emergency room. He was found slumped against the wall of a well known tavern. No history is available. Besides his unresponsiveness the only positive physical findings are a strong odor of alcohol on his breath, a blood pressure of 155/104 and trace pedal edema. The initial laboratory studies show an elevated alcohol level and a creatinine of 4.6 mg/dL. Which of the following findings help differentiate acute renal failure from chronic renal failure?
- A. His serum potassium is 5.2 mEq/L
 - B. His serum calcium is 7.6 mg/dL and his phosphorus is 5.1 mg/dL
 - C. On a chest x-ray the distal ends of his clavicles are eroded (renal osteodystrophy)
 - D. His serum bicarbonate is 17 meq/L
 - E. His hemoglobin is 9 grams/dL

48. A 72 year old man presents with a scalp mass. A biopsy shows a clear cell carcinoma. The most likely site of origin of the tumor is:
- A. Prostate gland
 - B. Urethra
 - C. Urinary bladder
 - D. Kidney
 - E. Renal pelvis

49. A 35 year old woman with polycystic renal disease who has been your patient for several years comes to see you because of a virus-like illness with nausea and vomiting for 4 days. She is weak and dizzy. BP supine 110/70 mmHg, standing 88/65mmHg; pulse 90 supine; 114 standing.

Her glomerular filtration rate (GFR) today is 70 liters/day and her plasma $[\text{HCO}_3^-]$ is 40 mEq/L. One month ago when she was feeling well, her GFR was 80 liters/day and her plasma $[\text{HCO}_3^-]$ was 25mEq/L. Assume that under normal conditions her proximal tubule reabsorbed 60% of filtered bicarbonate, but now that she is volume depleted the proximal tubular bicarbonate reabsorption has increased to 80% of filtered load.

Compared to her baseline, her proximal tubule bicarbonate reabsorption has increased during her present illness by:

- A. 1,040 mEq/day
- B. 1,200 mEq/day
- C. 2,000 mEq/day
- D. 2,240 mEq/day
- E. 2,800 mEq/day

50. The most common bacteria causing acute ascending pyelonephritis the first time is:
- A. Klebsiella
 - B. Pseudomonas
 - C. E. coli
 - D. Proteus
 - E. Staphylococcus aureus
51. Which of the following diuretics is **LEAST** likely to produce hypokalemia?
- A. Hydrochlorothiazide (Hydrodiuril)
 - B. Furosemide (Lasix)
 - C. Mannitol
 - D. Spironolactone (Aldactone)

52. A 62 year old female presents with peripheral edema, fatigue and a 10 lb. weight gain over the last 3 months. Her physical exam is remarkable only for marked peripheral edema and a blood pressure of 140/90.

Laboratory Studies:

Serum creatinine	1.8 mg/dL
Serum albumin	1.8 gm/dL
Serum cholesterol	520 mg/dL
Urinalysis	4+ protein, no blood
24 hour urine protein	9g

On renal biopsy all of the following histological findings would be consistent with the patient presentation EXCEPT:

- A. Nodular glomerulosclerosis with thickened capillary loops, PAS positive material along tubular basement membranes, positive immunofluorescence along tubular basement membranes and in nodules
 - B. Calcium deposits in the renal interstitium with inflammatory cellular infiltrate
 - C. Apple-green birefringence of glomerular and tubular deposits after Congo red staining
 - D. Diffuse and uniformly thickened glomerular capillary loops that with silver staining show spikes along capillary walls
53. Which of the following would NOT be an adverse effect of a diuretic agent?
- A. Volume contraction
 - B. Hypotension
 - C. Hypokalemia
 - D. Hypermagnesemia
54. The following are potential therapeutic options for patients with localized prostate cancer EXCEPT:
- A. Radical prostatectomy
 - B. Radiation therapy
 - C. Watchful waiting
 - D. Chemotherapy

55. Which one of the following is NOT associated with a poor prognosis in patients with acute tubular necrosis?
- A. Associated with trauma
 - B. Occurring postoperatively
 - C. Old age
 - D. A non-oliguric patient
56. A person is hospitalized and is given an intravenous feeding. He is in acid base balance. Two days later the composition of the feeding is changed to one that is higher in phosphates and cationic amino acids. All other factors being equal, each of the following statements is TRUE EXCEPT:
- A. The net total amount of nonvolatile acid that he produces will increase.
 - B. To remain in acid base balance, net acid excretion will need to increase.
 - C. Renal bicarbonate reabsorption will decrease.
 - D. Titrable acid excretion will increase.
57. A 70 year old alcoholic with cirrhosis presents with GI bleeding and a hemoglobin of 4G/dL. His blood pressure supine is 120/80 mmHg with a pulse rate of 100 beats/min. His upright blood pressure is 90/60 mmHg with a pulse rate of 120 beats/min. His serum creatinine has risen from 1 mg/dL to 3 mg/dL over the last two days and his urine output is 350 cc over the last 24 hours. His urine sodium is 60 mEq/L, urine creatinine is 15 mg/dL, urine osmolality is 300 mosm/Kg H₂O, and serum sodium is 130 mEq/L. A renal ultrasound revealed no significant abnormalities.
- All of the following are TRUE regarding this patient EXCEPT:
- A. Fractional excretion of sodium is less than 3%
 - B. He has acute renal failure
 - C. A urinalysis should have been done as part of the work up
 - D. Acute tubular necrosis is the most likely diagnosis

58. A 27 year old woman with insulin dependent diabetes mellitus has had her disease since age 12. She now has diabetic nephropathy. She has 8 grams of protein in her urine. Which statement is FALSE?
- A. Her urinalysis will show red cells and red cell casts
 - B. A kidney biopsy may show nodular glomerulosclerosis with hyaline deposits in afferent and efferent arterioles
 - C. Her renal disease is irreversible and progressive
 - D. Serum cholesterol levels will be high and serum albumin low
59. All of the following are TRUE about the effects of insulin on potassium homeostasis EXCEPT:
- A. May stimulate Na-K ATPase
 - B. Insulin levels increase with increased serum potassium
 - C. Insulin deficiency produces hypokalemia
 - D. Insulin aids in redistribution of an acute potassium load
60. Mechanisms of reduction of creatinine clearance in acute tubular necrosis include all of the following EXCEPT:
- A. Afferent arteriolar constriction
 - B. Altered glomerular permeability
 - C. Mesangiolysis
 - D. Backleak of glomerular filtrate
61. Clinically useful diuretics are associated with all of the following effects EXCEPT:
- A. Increased urinary sodium excretion
 - B. Increased urine volume
 - C. Increased hydrogen ion excretion
 - D. Increased urinary chloride excretion

62. Each of the following is TRUE about bicarbonate reabsorption by the proximal tubule EXCEPT:
- A. The number of Na^+/H^+ exchangers in the apical membrane is increased during extracellular volume depletion due to angiotensin II.
 - B. Carbonic anhydrase on the apical membrane allows for rapid conversion of carbonic acid to CO_2 and water which are then rapidly reabsorbed.
 - C. Bicarbonate can exit the cell on the basolateral membrane side by a $\text{Cl}^-/\text{HCO}_3^-$ exchanger.
 - D. Bicarbonate reabsorption increases during respiratory alkalosis.
63. A 44 year old woman with nephrotic syndrome due to focal glomerulosclerosis is being treated with salt restriction and diuretics (Furosemide). Over a 3 day period, she becomes weak and oliguric, but without signs of a systemic illness. Urinalysis shows 4+ protein, no blood, and 5-10 WBC/hpf. The least likely cause of this sudden worsening of renal function is:
- A. Worsening of the nephrotic syndrome
 - B. Ischemic acute tubular necrosis
 - C. Intravascular volume depletion
 - D. Acute interstitial nephritis
64. Each of the following is TRUE of adult polycystic kidney EXCEPT:
- A. Hypertension is common
 - B. Often associated with berry aneurysms at circle of Willis
 - C. When uremic, kidneys are bilaterally granular and contracted
 - D. Hematuria is common
 - E. Nephrons with cysts may continue to function

65. Loop Diuretics might produce all of the following effects EXCEPT:
- A. Volume contraction
 - B. Hypercalcemia
 - C. Hypokalemia
 - D. Impaired urinary concentration
 - E. Impaired urinary dilution
66. Features associated with analgesic associated (abuse) nephropathy may include each of the following EXCEPT:
- A. Papillary necrosis
 - B. Renal colic
 - C. Sterile pyuria
 - D. Unilateral renal damage
 - E. Carcinogenesis
67. Fibrinoid necrosis of arteries or afferent arterioles may be seen in each of the following diseases EXCEPT:
- A. Polyarteritis nodosa
 - B. Malignant hypertension
 - C. Systemic lupus erythematosus
 - D. Thrombotic thrombocytopenic purpura

68. A 70 year old woman is brought to the emergency room. She had experienced watery diarrhea, became dizzy, fell and was unable to get up. She was unable to gain access to food or water for 24 hours. She was found by a neighbor who called EMS. Her only medication is Furosemide.

During a routine check up 2 weeks ago she was awake and alert with a blood pressure of 140/90 mmHg and pulse of 72 beats/min.

Today, she is very weak and lethargic. Her blood pressure is 90/40 mmHg, heart rate 110 beats/min, supine; temperature 98°F; weight 60 kg. She is unable to move her left leg without pain.

Laboratory evaluation shows:

plasma [Na] = 150 meq/L	plasma glucose = 90 meq/L
plasma [K] = 3 meq/L	BUN = 28 mg/dl
plasma [Cl] = 118 meq/L	serum creatinine = 1.0 mg/dl
plasma total venous CO ₂ = 19 meq/L	

All of the following statements about her condition are TRUE EXCEPT:

- A. The Furosemide prevents her from concentrating her urine maximally.
 - B. Both osmotic and baroreceptor stimuli for antidiuretic hormone secretion are present.
 - C. Total body water content is decreased.
 - D. Total body sodium content is increased.
 - E. Her calculated plasma osmolality is 315 mosm/kg water.
69. Which of the following is NOT involved in the pathogenesis of acute tubular necrosis?
- A. Hypoxia
 - B. Cytokines
 - C. Endotoxemia
 - D. Depletion of intracellular calcium
 - E. Neutrophil activation

70. As renal failure progresses, kidneys shrink bilaterally in all EXCEPT:
- A. Chronic interstitial nephritis
 - B. Benign nephrosclerosis
 - C. Diffuse proliferative lupus glomerulonephritis
 - D. Idiopathic focal segmental glomerulosclerosis
 - E. Adult polycystic kidney disease
71. Which of the following statements concerning transitional cell carcinoma of the urinary bladder is FALSE?
- A. Hematuria is the most common presenting symptom
 - B. Patients often develop recurrences after completion of the initial treatment
 - C. Stage at diagnosis is the most important prognostic indicator
 - D. Is most common in regions of the world where *Schistosomiasis* is endemic
 - E. Accounts of over 90% of bladder tumors in North America
72. Characteristics of acute bacterial pyelonephritis include all of the following EXCEPT:
- A. RBC casts
 - B. Leukocytosis
 - C. Back or loin pain
 - D. Fever
 - E. WBC casts

73. Which of the following statements concerning prostate cancer is NOT TRUE?
- A. It is almost always advanced at the time of diagnosis
 - B. Stage and grade are the most important predictors of tumor behavior (prognosis)
 - C. Serum PSA (prostate specific antigen) is elevated in most patients
 - D. The majority are adenocarcinomas
 - E. The tumor is most often found in men between 60 and 75 years of age
74. Which of the following is UNTRUE of minimal change disease?
- A. It generally presents with the nephrotic syndrome
 - B. It generally responds to steroids
 - C. Serum C3 level is normal throughout its course
 - D. It has a poor prognosis
 - E. It is the most common cause of the nephrotic syndrome in children
75. All of the following are appropriate in the treatment of severe hyperkalemia EXCEPT:
- A. Calcium chloride
 - B. Glucose and insulin
 - C. Magnesium sulfate
 - D. Beta 2 agonists (Albuterol)
 - E. Sodium Bicarbonate

76. Of the following, which is least likely a histologic feature of acute (allergic) interstitial nephritis:
- A. Eosinophils in the interstitium
 - B. Interstitial fibrosis
 - C. Evidence for "tubulitis"
 - D. Interstitial edema
 - E. Lymphocytes in the interstitium
77. A 59 year old man is admitted with a rapidly rising creatinine. 2 months ago, his serum creatinine was normal. When seen last week in his physicians office for symptoms of bronchitis, his creatinine was 2.6 mg/dL. Today, it is 4.2 mg/dL. A urinalysis shows 2+ protein, RBC's, WBCs, granular casts. Serum complement tests are within normal limits. This presentation is consistent with all of the following EXCEPT:
- A. Wegener's granulomatosis
 - B. Goodpasture's syndrome
 - C. Polyarteritis nodosa
 - D. Membranous glomerulopathy
 - E. Post streptococcal glomerulonephritis
78. Crescentic glomerulonephritis may be associated with all of the following EXCEPT:
- A. A linear fluorescence
 - B. raised serum titers of P-ANCA
 - C. A good prognosis
 - D. Raised serum titers of C-ANCA
 - E. A systemic vasculitic syndrome

79. Complications of acute renal failure include all EXCEPT:
- A. Hyperkalemia
 - B. Pulmonary edema
 - C. Pericarditis
 - D. Hypophosphatemia
 - E. Metabolic acidosis
80. Morphologic features associated with severe vesico-ureteral reflux in a child include each of the following on the ipsilateral side EXCEPT:
- A. "Golf hole" vesico-ureteral orifice
 - B. Normal kidney size
 - C. Laterally displaced vesico-ureteral orifice
 - D. Short, perpendicular course of the intramural (distal end of the) ureter
 - E. Ureteral dilation

MATCHING ITEMS

In each of the following groups there are two numbered lists. Mark on the answer sheet in the line corresponding to each question number in the lower list (81-130) the letter of the related item of the upper list.

DIRECTIONS: Match the following sites along the nephron (A-D below) with the tubular function that occurs in the segments numbered 81-84. Each alternative may be used once, more than once, or not at all.

- A. Proximal Tubule
- B. Cortical collecting tubule
- C. Thick ascending limb of Henle's Loop
- D. Distal convoluted tubule

- 81. Major site of isotonic sodium and water reabsorption
- 82. Always impermeable to water
- 83. Major site of potassium secretion
- 84. Major site of Bicarbonate reabsorption

DIRECTIONS: Match each alternative (A-E below) with the appropriate statement numbered 85-88. Each alternative may be used **once only**.

- A. Impaired solute reabsorption by the thick ascending limb of Henle
- B. Insufficient secretion of antidiuretic hormone
- C. Abnormal V2 receptor structure
- D. Stimulation of chemoreceptors for antidiuretic hormone secretion

- 85. A male infant with hereditary nephrogenic diabetes insipidus
- 86. An emphysematous individual with $pO_2 = 43$ mmHg
- 87. A woman who has surgery to remove a tumor near the optic chiasm
- 88. An individual with mineralocorticoid deficiency

DIRECTIONS: Match the renal conditions (A-D below) with the corresponding statements numbered 89-92. Each alternative may be used once, more than once, or not at all.

- A. Bilateral renal hypoplasia
- B. Bilateral renal agenesis
- C. Medullary sponge kidney
- D. Infantile polycystic kidney disease

- 89. Papillary duct ectasia
- 90. Born of an oligoamniotic pregnancy with skeletal abnormalities
- 91. Autosomal recessive transmission is the rule
- 92. Bilaterally decreased renal lobes

DIRECTIONS: Match the lab values (A-D below) with the corresponding individuals referred to in questions 93-96. Each alternative may be used once, more than once, or not at all.

	pH	pCO ₂ mm Hg	[HCO ₃ ⁻] mEq/L	[Na ⁺] mEq/L	[Cl ⁻] mEq/L
A.	7.34	29	15	140	103
B.	7.34	29	15	140	113
C.	7.60	20	19	140	113
D.	7.50	46	35	140	93

- 93. A child with acute asthma who is breathing 32 times per minute.
- 94. A diabetic man who ran out of insulin two days ago.
- 95. A woman with a viral illness who has been vomiting for 2 days.
- 96. A man who was given a carbonic anhydrase inhibitor for glaucoma.

DIRECTIONS: Match the diagnosis (A-D below) with the appropriate clinical situation numbered 97-100. Use each alternative once only.

- A. Acute bilateral urinary tract obstruction
- B. Acute tubular necrosis
- C. Acute glomerulonephritis
- D. Pre-renal azotemia

97. A 60 year old man developed sudden onset of anuria. On examination, he had a large abdominal mass extending from symphysis pubis to the umbilicus.
98. A 60 year old man has been treated for congestive heart failure with a diuretic (Furosemide). His neck veins were not distended and his lungs were clear to auscultation and percussion.
99. A 45 year old woman was diagnosed to have urinary tract infection and was treated with gentamicin (an aminoglycosides). A week later, her physician found out that her BUN and serum creatinine were both elevated. She was asymptomatic.
100. A 45 year old woman with mitral valve prolapse had her teeth and gums cleaned by a dental hygienist. The next day, she developed fever and chills. Two weeks later she was admitted to the hospital and subsequently a diagnosis of endocarditis was made and she was started on antibiotics. Two weeks later she also developed hematuria and her serum complements (C3 and C4) were depressed.

DIRECTIONS: Match the associated pathology (A-E below) with the corresponding conditions numbered 101-105. Each alternative may be used once, more than once, or not at all.

- A. Unilateral small kidney
- B. Pulmonary embolism
- C. Papillary necrosis
- D. Crescentic glomerulonephritis
- E. Bilateral cortical necrosis

- 101. Thrombotic microangiopathy
- 102. Fibromuscular dysplasia
- 103. Membranous glomerulonephritis
- 104. Homozygous sickle cell anemia
- 105. P-ANCA associated vasculitis

DIRECTIONS: Match the urinary sediment (A-E below) with the appropriate clinical presentation numbered 106-110. Use each alternative once, more than once, or not at all.

	A	B	C	D	E
Eosinophils	-	-	+	-	-
Tubular epithelial cells	+	-	+	-	++
Oval fat bodies	-	++	-	-	-
RBCs	+	-	+	++	-
WBCs	++	-	++	+	-
RBC casts	-	-	-	++	-
WBC casts	++	-	+	+	-
Granular casts	-	+	-	-	++
Lipid casts	-	++	-	-	-
Epithelial casts	-	-	+	-	+
Broad brown casts	-	-	-	-	++
Bacteria	++	-	-	-	-
Dirty background	-	-	-	-	++
Hexagonal crystals	-	-	-	-	-

- 106. Acute renal failure while on treatment with methicillin
- 107. Acute renal failure following crush injuries during an earthquake
- 108. Acute renal failure with generalized edema following skin infections by streptococci
- 109. Nephrotic syndrome of unknown cause
- 110. Fever, flank pain, leukocytosis and discomfort during micturition

DIRECTIONS: Match the glomerular histology (A-D below) with the appropriate clinical statements numbered 111-114. Use each alternative only once.

A. Figure 503

B. Figure 504

C. Figure 505

D. Figure 506

111. A 26 year old juvenile diabetic with the nephrotic syndrome

112. A 26 year old man with Goodpasture's disease

113. A 10 year old boy with a third recurrence of the nephrotic syndrome and normal renal function

114. A 63 year old non-diabetic with the nephrotic syndrome and lung cancer

DIRECTIONS: Match the immunomicrograph (A-D below) with the appropriate statements numbered 115-118. Use each alternative only once.

A. Figure 507

B. Figure 508

C. Figure 509

D. Figure 510

115. The distribution of IgG in Goodpasture's disease

116. The distribution of IgA in Berger's disease (syn. IgA nephropathy)

117. The distribution of Fibrin in Goodpasture's disease

118. The distribution of IgG in membranous glomerulonephritis

DIRECTIONS: Match the electron micrograph (A-D below) with the corresponding disease numbered 119-122. Use each alternative only once.

- A. Figure 511
- B. Figure 512
- C. Figure 513
- D. Figure 514

- 119. Diffuse proliferative glomerulonephritis of Systemic Lupus Erythematosus
- 120. Acute post-streptococcal glomerulonephritis
- 121. Minimal change disease
- 122. Idiopathic membranous glomerulonephritis

DIRECTIONS: Match each histology from the photomicrographs (A-D below) with the corresponding disease listed as 123-126. Use each alternative only once.

- A. Figure 515
- B. Figure 516
- C. Figure 517
- D. Figure 518

- 123. Acute pyelonephritis
- 124. Acute (allergic) interstitial nephritis
- 125. Thrombotic microangiopathy
- 126. Polyarteritis nodosa

DIRECTIONS: Match the photomicrograph (A-D below) with the corresponding statement numbered 127-130. Use each alternative only once.

A. Figure 519

B. Figure 520

C. Figure 521

D. Figure 522

127. Renal condition inherited as autosomal recessive

128. Kidney structure indicating premature birth

129. Renal condition inherited as autosomal dominant

130. Renal histology indicating dysplasia