

Chapter 20

Diseases of the kidney:

1. Which of the following is seen in Nephrotic syndrome (2000, 2004)
 - (a) Albumin is lost in the urine, while other globulins are unaffected
 - (b) Early hypertension
 - (c) A reduction in serum lipid levels
 - (d) Sodium and water retention
 - (e) gross haematuria

2. In the diagnosis of renal hypertension (x2)
 - (a) acute glomerulonephritis whilst causing nephrotic syndrome, does not generally cause hypertension
 - (b) 60% of cases of renovascular hypertension are due to fibromuscular dysplasia
 - (c) Malignant hypertension only occurs in patients with previous hypertension
 - (d) Onion skinning is proportional to the degree of renal failure
 - (e) none of the above is true

3. Malignant hypertension
 - (a) 75% recover with no loss of renal function
 - (b) is associated with abnormal renin levels
 - (c) is always seen in those patients with pre-existing hypertension
 - (d) is not associated with morbidity
 - (e) affects 1-5% of patients with hypertension

4. In chronic renal failure the morphology includes
 - (a) hyperplasia of nephrons
 - (b) hypertrophy of nephrons
 - (c) reduction in the connective tissue surrounding arterioles
 - (d) metaplasia within nephrons
 - (e) none of the above

5. Acute tubular necrosis is not caused by
 - (a) erythromycin
 - (b) lead
 - (c) carbon tetrachloride
 - (d) IV contrast
 - (e) gentamycin

6. Concerning acute tubular necrosis
 - (a) cephalosporins are not a causative agent
 - (b) nephrotoxic causes are associated with poor outcomes
 - (c) casts are found in the loop of Henle
 - (d) rhabdomyolysis is not a cause
 - (e) ischaemic tubular necrosis is uncommon after haemorrhagic shock

7. Regarding acute tubular necrosis
 - (a) it is associated with hyperkalaemia in recovery
 - (b) non-oliguric type has a better recovery

- (c) it is associated with ischaemic cortical cells
- (d) 80% of cases are associated with anuria
- (e) intrarenal vasodilation is a major cause of ATN

8. Ischaemic tubular necrosis is characterised by all these features except

- (a) tubular cast obstruction
- (b) distal necrosis only
- (c) an intact basement membrane
- (d) predominantly proximal necrosis
- (e) a maintenance stage consisting of polyuria

9. In pyelonephritis

- (a) 85% of infections are caused by gram-negative bacteria
- (b) ureteric obstruction makes haematogenous infection less likely
- (c) ureteric obstruction allows bacteria to ascend the ureter into the renal pelvis
- (d) infection is less likely during pregnancy
- (e) papillary necrosis and perinephric abscesses are common sequelae

10. Urolithiasis

- (a) and the presence of hypercalcaemia implies renal insufficiency
- (b) in a patient with leukaemia is likely to be made up of cystine
- (c) is calcium based in 35% of calculi
- (d) made up of magnesium ammonium phosphate are struvite stones,
- (e) by calcium oxalate stones is primarily due to hypercalciuria

10. Regarding renal stones

- (a) most calcium stones form in patients with hypercalcaemia
- (b) urate stones form in the plasma from uric acid crystals
- (c) 80% are unilateral
- (d) struvite stones are generally small and pass easily
- (e) most staghorn calculi form idiopathically

11. Which stones form preferentially at a high pH

- (a) cysteine
- (b) urea
- (c) calcium oxalate
- (d) calcium phosphate
- (e) magnesium ammonium phosphate

12. In hepatorenal syndrome

- (a) it is irreversible
- (b) one loses the ability to concentrate urine
- (c) urine has a high sodium concentration
- (d) the urine is hyperosmolar
- (e) the favoured theory for the pathogenesis is increased renal blood flow

13. Regarding acute renal failure

- (a) glomerulonephritis is usually immune mediated
- (b) glomerular filtration rate is usually 20-50% of normal

- (c) it is often irreversible
- (d) caused by acute tubular necrosis is irreversible
- (e) none of the above is true

14. Acute tubular necrosis is characterised by (2006)

- (a) casts which cause tubular occlusion
- (b) an intact BM
- (c) interstitial (?necrosis)
- (d)
- (e)

Answers:

1. Which of the following statements is true in nephrotic syndrome (2000, 2004) p978
 - (a) The **largest proportion of protein lost in the urine is albumin**, but other globulins are also affected in certain diseases. Diseases are either selective (albumin and other LMW proteins) or unselective, including HMW proteins.
 - (b) Hypertension is a common finding (**indicates progression**)
 - (c) There is hyperlipidaemia ?associated with decreased lipoprotein by the liver, and lipiduria occurs later.
 - (d) Sodium and water retention, which aggravates the oedema**
 - (e) There is gross haematuria **in nephritis**. Nephrotic syndrome does not generally cause haematuria

2. In the diagnosis of renal hypertension (x2 asked) p1007-8
 - (a) acute glomerulonephritis, renal artery stenosis, vasculitis and renin producing tumours are all a **cause of renal hypertension**
 - (b) **renovascular hypertension** is due to aortic insufficiency, polyarteritis nodosa, or coarctation of the aorta. Hyperplastic arteriosclerosis is due to actions of PDGF, and other mitogenic factors which cause hyperplasia of smooth muscle cells.
 - (c) Malignant hypertension generally occurs in patients with previous hypertension, **but may occasionally develop in previously normotensive individuals.**
 - (d) Onion skinning (also known as hyperplastic arteriolitis) is proportional to the degree of renal failure**
 - (e) none (wrong)

3. Malignant hypertension p1007
 - (a) **50% recover with pre-crisis renal function**
 - (b) is associated with markedly elevated plasma renin levels**
 - ***(c) is rarely seen in previously healthy individuals** and is mostly seen in those patients with pre-existing hypertension
 - ***(d) is associated with morbidity, and previously had a very high mortality rate**
 - (e) affects 1-5% of all patients with elevated blood pressure**

4. In chronic renal failure the morphology includes (*Guyton p371*)
 - (a) hyperplasia of nephrons **does not occur**
 - (b) hypertrophy of remaining nephrons**
 - ***(c) increased connective tissue surrounding arterioles, (arteriosclerosis)**
 - ***(d) metaplasia within nephrons does not occur**
 - ***(e) none (wrong)**

5. Acute tubular necrosis is not caused by (*Guyton 10th p370*)
 - (a) erythromycin**
 - (b) lead
 - (c) carbon tetrachloride
 - (d) IV contrast
 - (e) gentamycin (aminoglycosides, not stated, but in Davidson's) caused by heavy metals, oncology drugs, ethylene glycol, insecticides and tetracyclines

6. Concerning acute tubular necrosis p993-994

- (a) **cephalosporins are not a causative agent (a/c to Guyton they're not on the list)**
- (b) ***nephrotoxic causes are associated with 95% recovery with proper care, when there has not been concomitant damage to other organs***
- (c) casts are found in the ***principally in the collecting ducts, and occasionally in the final parts of the Asc LoH*** (fig 20-33)
- (d) ***rhabdomyolysis is a cause*** (not in the text, but obvious and in Davidson's Principles and Practice of Medicine 17th edn p626)
- (e) ***ischaemic tubular necrosis is common after haemorrhagic shock***

7. Regarding acute tubular necrosis p995-6

- (a) it is associated with ***hypokalaemia in recovery***
- (b) **non-oliguric type has a better recovery (as it is associated with toxin ATN)**
- (c) it is associated with ***ischaemic thick limb of the renal medullary cells***
- (d) initial ***oliguria (initiation), then polyuria (recovery)***
- * (e) intrarenal ***vasoconstriction*** is a major cause of ATN

8. Ischaemic tubular necrosis characterised by (p995-6)

- (a) **tubular cast occlusion**
- (b) mostly ***proximal tubule and thick ascending medulla necrosis***
- (c) ***an intact basement membrane in parts, but patchy rupture is also seen***
- (d) toxic shows predominantly proximal necrosis, ***whereas ischaemic is some PT and ALoH***
- (e) an ***initial phase with increased BUN and decreased urine, a maintenance phase, with a reduction in urine output to as little as 40mL/day, then a recovery stage*** consisting of polyuria, up to 3L/day. Recovery is possible due to the maintenance of most of the basement membrane.

9. In pyelonephritis p999-1000

- (a) **85% of infections are caused by gram-negative bacteria**
- (b) ureteric obstruction makes haematogenous infection ***more likely***
- (c) ureteric obstruction ***is a predisposing risk factor, but as for inducing stasis and therefore infection, it is not stated***
- (d) infection is ***more*** likely during pregnancy (4-6% of pregnant women have bacteruria, and 20-40% will develop a UTI if not treated)
- (e) papillary necrosis ***is seen in diabetics, and those with obstruction;*** and perinephric abscess ***implies extension of suppurative inflammation through the renal capsule and into the perinephric tissue. This disease usually follows a benign course.***

9. Urolithiasis (p1014-5)

- (a) and the presence of hypercalcaemia implies renal insufficiency
- (b) caused by ***cysteine is due to genetic defects***, which cause a decrease in renal reabsorption of cysteine, and the stones form at a low pH (1-2% of all stones). Uric acid stones are seen in association with leukaemia
- (c) is calcium oxalate or phosphate in ***70% of calculi***
- (d) **made up of magnesium ammonium phosphate are struvite stones (15%),**
- (e) by calcium oxalate stones is primarily due to hypercalciuria

10. Regarding renal stones (p1014-5)

(a) **10% of calcium stones form in patients with hypercalcaemia and hypercalciuria, most are idiopathic (50%). 70% are oxalate or phosphate, 20% struvite, 10% urate.** Oxalate stones form because of **idiopathic hypercalciuria (50%), hyperoxaluria, hyperuricosuria, unknown in 15-20%**

(b) form in the urine **from uric acid crystals at a low pH.**

(c) 80% are unilateral

***(d) struvite stones are some of the largest found, due to large urea formation**

***(e) most staghorn calculi form as a result of infection**

Stones are formed when the concentration of the molecules that make up the stones exceed the solubility. A low urine volume may contribute. 20% of oxalate stones are associated with increased uric acid secretion (uricosuric). Small stones cause pain and obstruction, large stones are silent and cause haematuria. Infection is more common due to obstruction and trauma

11. Which stones form preferentially at a high pH, p1014

(a) cysteine **stones form at a low pH, and are due to genetic defects in amino acid resorption**

(b) urate (**high cell turnover, gout**)

(c) calcium oxalate (**hypercalciuria and hypercalcaemia**)

(d) calcium oxalate and phosphate (**hypercalciuria and hypercalcaemia**)

(e) magnesium ammonium phosphate, as the urea-splitting bacteria (proteus and some staphylococci) convert urea to ammonia.

12. Regarding hepatorenal syndrome (old paper) p882

(a) it is irreversible (not stated, but the outlook is poor)

(b) the ability to concentrate urine is **retained**

(c) the urine is **surprisingly low** in sodium

(d) the favoured theory is the **decrease in renal blood flow**, secondary to systemic vasodilation

(e) the urine is hyperosmolar, devoid of proteins and sediment and low in sodium

13. Regarding acute renal failure p370 Guyton 10th, p960-1

(a) glomerulonephritis is usually immune mediated

(b) glomerular filtration rate is usually **20-25% of normal**

(c) it is **frequently reversible**

(d) caused by acute tubular necrosis is **reversible, as the basement membrane is usually intact**

(e) none of the above is true (**wrong**)