12 KIDNEY IN SYSTEMIC DISEASES

1. List the categories of systemic diseases that can cause renal affection?

1. Autoimmune disorders (SLE, scleroderma, Rheumatoid arthritis)
2. Vasculitis (Poly arteritis nodosa, Wagner granulomatosis, Churg Strauss)
3. Malignancies (multiple myeloma, lymphoma, and leukemia)
4. Amyloidosis
5. Infection (HCV, HBV, HIV, post-streptococcal GN, and infective endocarditis)
6. Metabolic disorders (Diabetes Mellitus and Hypertension)
7. Pulmonary-renal Syndromes (Goodpasture syndrome, SLE)
8. Decompensated Heart failure
9. Advanced Liver cell failure

2. Define lupus nephritis?

- Lupus nephritis is an inflammation of the kidneys caused by Systemic Lupus Erythematosus (SLE).

3. List the cardinal features of lupus nephritis?

1. Haematuria
2. Proteinuria
3. Impaired renal function

4. Mention the autoantibodies used to support the diagnosis of lupus nephritis?

1. Anti-nuclear antibody (ANA), often with a titre of >1:160.
2. High titre of anti-dsDNA, which increases the likelihood of lupus nephritis.

5. Outline the histological classification of lupus nephritis provided by the International Society of Nephrology?

Class	Description
Class I	Minimal mesangial lupus nephritis
Class II	Mesangial proliferative Lupus nephritis
Class III	Focal proliferative lupus nephritis
Class IV	Diffuse proliferative lupus nephritis
Class V	Membranous lupus nephritis
Class VI	Advanced sclerosing lupus nephritis

6. Define Scleroderma Renal Crisis (SRC)?

- Scleroderma renal crisis is characterized by a new onset of blood pressure >150/85 mmHg obtained at least twice over 24 hours.
- It is further defined by a documented decrease in renal function, specifically a decrement of >30% in the calculated glomerular filtration rate (eGFR).

7. List the corroborative features of Scleroderma Renal Crisis?

1. Microangiopathic haemolytic anaemia
2. Hypertensive retinopathy
3. New onset of urinary RBCs
4. Flash pulmonary oedema
5. Oliguria or anuria

8. Describe the typical renal biopsy findings in Scleroderma Renal Crisis?

- Vessels show profound intimal proliferation that may completely occlude the lumen.
- Fibrinoid necrosis may be present in the vessel walls.
- Glomeruli collapse with wrinkling of the basement membrane.

9. Identify the primary ways the kidney is compromised in patients with rheumatoid arthritis (RA)?

1. Secondary amyloidosis.
2. Side effects of medications such as NSAIDs, gold, and penicillamine.
3. Renal lesions directly due to the disease itself, though these are infrequent.

10. List the clinical manifestations that suggest the onset of secondary amyloidosis in RA patients?

1. Proteinuria
2. Renal insufficiency
3. Diarrhoea

11. Define ANCA-associated vasculitis (AAV)?

1. AAV is a rare autoimmune disease resulting in rapidly progressive kidney impairment and immune-mediated destruction of other organs.
2. It is a necrotising small-vessel vasculitis characterized by a relapsing and remitting course.

12. Mention the autoantibodies associated with ANCA-associated vasculitis?

- ANCA-P
- ANCA-C

13. Enumerate the renal clinical manifestations of ANCA-associated vasculitis?

1. Microscopic haematuria
2. Proteinuria
3. Progressive renal impairment
4. Oligoanuric renal failure

14. List the respiratory tract manifestations associated with ANCA-associated vasculitis?

1. Cough and haemoptysis
2. Pulmonary infiltrates
3. Cavitating lung granulomata
4. Alveolar capillaritis with pulmonary haemorrhage

15. Detail the ENT manifestations of ANCA-associated vasculitis?

1. Nasal crusting and sinusitis
2. Hearing loss, both conductive and sensorineural
3. Laryngotracheal granulomatous inflammation causing subglottic stenosis
4. Chondritis of the nasal or auricle cartilage

16. List the skin changes seen in patients with ANCA-associated vasculitis?

1. Purpuric rash
2. Painful erythematous nodules
3. Focal skin necrosis or ulceration

17. Detail the constitutional symptoms found in patients with ANCA-associated vasculitis?

1. Fever
2. General malaise
3. Weight loss
4. Anorexia

18. List the mechanisms by which infections can cause renal disease?

1. Pre-renal mechanisms
2. Post-renal mechanisms
3. Direct renal involvement
4. Post-infectious phenomenon

19. Enumerate the systemic signs and examination findings in infection-related renal disease?

1. Systemic inflammatory response syndrome (SIRS)
2. Peripheral stigmata of infective endocarditis
3. Choroidoretinitis
4. New cardiac murmurs
5. Hepatosplenomegaly
6. Meningism or abrupt changes in mental status

20. List common viral causes of glomerulonephritis?

1. Hepatitis B (Membranous GN, MPGN)
2. Hepatitis C (MPGN with cryoglobulinaemia)
3. HIV (HIVAN collapsing FSGS)
4. Parvovirus (Collapsing FSGS)
5. CMV (TIN, Membranous)

21. List common bacterial causes of glomerulonephritis?

1. Staphylococcus species, especially S. aureus
2. Streptococcus species, including Group A and S. pneumoniae
3. Salmonella species
4. Leptospira species

22. Define the clinical triad of diabetic nephropathy?

1. Albuminuria
2. Evolving hypertension
3. Progressive decline in renal function

23. Summarize the stages of diabetic nephropathy?

Stage	Duration (Years)	Proteinuria (ACR mg/mmol)	Pathology
Hyperfiltration	<3	<3	Glomerulomegaly
Silent	3-5	<3	Increased basement membrane thickness
Minimally elevated albuminuria	5-10	3-30	Increased mesangial deposition
Overt nephropathy	10-20	>30 to nephrotic	Nodular glomerulosclerosis and fibrosis
End-stage kidney disease	>20	>30 to nephrotic	Marked glomerulosclerosis and fibrosis

24. Define arterial hypertension?

- Hypertension is arbitrarily defined as a persistently elevated arterial blood pressure exceeding 140/90 mmHg in adults.

25. Define accelerated (malignant) hypertension?

- It is a severe increase in blood pressure ≥180/120 mmHg associated with new or progressive end-organ damage, such as retinopathy.

26. List initial investigations required for a patient presenting with hypertension?

1. Blood electrolytes, creatinine, and eGFR
2. Fundoscopy
3. Random blood glucose and serum cholesterol (Total and HDL)
4. Urine strip for protein and blood
5. 12 lead ECG
6. Weight and height for BMI

27. Define hepatorenal syndrome (HRS)?

- HRS is a critically important cause of acute kidney injury specifically occurring in patients with cirrhosis.

28. State the diagnostic criteria for hepatorenal syndrome?

1. Diagnosis of liver disease with cirrhosis, portal hypertension, and ascites.
2. No response to 2 days of diuretic withdrawal and administration of intravenous albumin (1 g/kg/day, max 100 g/day).
3. Absence of other potential causes like shock or nephrotoxic drug use.
4. No evidence of parenchymal renal damage (Proteinuria <500 mg/day, normal ultrasound, and <50 RBCs per high-powered field).

29. Define pulmonary-renal syndrome (PRS)?

- PRS is renal failure occurring in association with respiratory failure.

30. List the autoimmune causes of pulmonary-renal syndrome?

1. ANCA-associated vasculitis (56-77.5% of cases)
2. Anti-glomerular basement membrane disease (12.5-17.5% of cases)
3. Lupus vasculitis
4. IgA vasculitis
5. Antiphospholipid syndrome

31. Identify non-autoimmune causes of diffuse alveolar hemorrhage with renal impairment?

1. Acute kidney injury with pulmonary oedema
2. Infections (Leptospirosis, S. aureus, Legionella, Hantavirus, Malaria)
3. Thromboembolic disease

32. List the general causes of renal dysfunction in patients with malignancy?

1. Reduced nephron mass (e.g., nephrectomy or direct invasion)
2. Post-renal obstruction (e.g., prostate cancer or ureteric compression)
3. Pre-renal factors (e.g., sepsis or cardiomyopathy)
4. Endogenous toxins (e.g., tumour lysis syndrome or light chain disease)
5. Exogenous factors (e.g., intravenous contrast or chemotherapy nephrotoxicity)
6. Malignancy-related glomerulopathy (e.g., minimal change disease or myeloma nephropathy)