Acute Kidney Injury

AKI/AKD

Acute Kidney Injury

- Also called Acute Renal Failure or Acute Kidney Disease.
- Defination: it is a syndrome of decreased renal function characterized by increased serun creatinine and reduced urine output occurring acutely (ie over hours or days)

- Rise in serum creatinine above 0.3mg/dL in 48 hrs
- Urine output: less than 0.5mL/Kg/hr

Causes of AKI are classified as follows

1- Pre-Renal

2- Renal/ Intrinsic

3- Post-renal

-Pre-renal causes of AKI are those that decrease the effective blood flow to the kidneys, hence a subsequent decrease in the GFR.

Examples

-Hypovolemia (dehydration, vomiting, diarrhea)

-Low BP, Heart failure

-Renal artery stenosis, renal vein thrombosis

Renal Causes/ Intrinsic causes

These are due to disease processes that damage the kidney itself eg glomerulonephritis, ATN (Acute Tubular Necrosis), AIN (Acute Interstitial Nephritis), drugs (gentamicin, amphotericin B, Omeprazole)

Post Renal Causes

- These are disease states downstream of the kidneys.
- They cause urinary tract obstruction
- Obstruction can be

a) within the renal tract

b) Extrinsic obstruction/ compression

Intrinsic Obstruction

- Renal stones
- Renal tract stricture
- Renal tract malignancy
- Clot of blood

Extrinsic Obstruction

This causes compression on the renal tract.

Examples

1- pelvic malignancy

2- BPH

3- Retroperitoneal fibrosis

Signs and Symptoms

NB: AKI can occur without any signs or symptoms. In this case it can be detected through lab tests done for other reasons.

Dehydration – thirsty, oliguria, reduced CRT, tachycardia, reduced BP, dry mucous membranes, reduced skin turgor.

- Proteinuria
- Haematuria (indicates glomerulonephritis)
- Accumulation of fluids in the body ie peripheral oedema, pulmonary oedema (SOB), cardiac tampnade
- Signs of elevated urea (uraemia) ie headache, confusion, drowsiness, seizures, coma
- N/V and LOA

- Fatigue
- Chest pains
- Pain in the flanks, palpable bladder, enlarged prostate

Invstigations

- Urinalysis
- Urine microscopy
- Urea and Electrolytes
- FBC
- Culture (Urine, blood)
- USS- Kidneys
- CXR (? Pulmonary oedema)
- ECG/ECHO
- HIV/Hepatitis serology

Principles of Management of AKI

-Management of AKI needs diagnosis and treatment of the cause of AKI

Pre-Renal correct fluid depletion ie give IV fluids (RL)

Renal -withdraw nephrotic drug

- You might need to do biopsy to diagnose an intrinsic disease

Post-renal –put urinary catheter to allow free-flow of urine

Common in all three aetiologies is the need to manage fluid balance, acidosis, and hyperkalaemia

Complicated AKI- you need haemodialysis to remove toxins from the body