Sub:

Renal failure

⊙ Renal failure is defined as a significant loss of renal function in both kidneys to the point where less than 10 to 20% of normal GFR remains.

⊙ Renal failure may occure as an acute and rapidly progressing process or may present as a chronic form in which there is a progressive loss of renal function over a number of years.

⊙ Acute renal failure has an abrupt onset and is potentially reversible.

⊙ chronic failure progress slowely over at least three months and can lead to ~~per~~ permanent renal failure.

Pathophysiology :

⊙ In renal failure there is either glomerular or tubular dysfunction.

Eg - glomerulonephritis primarily causes of glomerular damage.

aminoglycoside nephrotoxicity is mainly in tubular.

Glomerular dysfunction → As the main function of glomeruli is filtration, glomerular dysfunction leads to fall in GFR with retention of those substances usually cleared by filtration including water.

Tubular Dysfunction → As the main function of tubules is reabsorption tubular failure results in the voiding of large volumes of dilute urine of low specific gravity, along with electrolytes and nutrients.

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Acute renal failure:

- Sudden decrease in renal function.
- Acute renal failure may be pre-renal, intra-renal or post renal in nature. Acute renal failure is often reversible so long as permanent injury to the kidney has not occurred.

Manifestations:

- Oliguria (reduced urine output)
- possible edema and fluid retention.
- Alterations in serum electrolytes.
- Elevated blood urea nitrogen levels and serum creatinine.

cause of acute renal failure:

- Myocardial infarction, rhabdomyolysis decreased blood flow, obstruction, hemolytic uremic syndrome, Glomerulo nephritis are common cause of acute renal failure.
- Acute renal failure classified as pre-renal failure, intra-renal failure and post renal failure.

Pre-renal failure:

- Results from impaired or reduced blood flow to the kidney.
- possible causes, shock, hypotension, anaphylaxis, ischemic formation.

Intra-renal failure:

- Results from acute damage to renal structures.

possible causes -

- acute glomerulonephritis, pyelonephritis.

- May also result from acute tubular necrosis (ATN)
- damage of kidney structure from exposure to toxins solvents drugs and heavy metals, ATN is the most comon cause of acute renal failure.

- post-renal failure:

- Results from conditions block of urine outflow.
- possible cause: obstruction of urine outflow by calculi. tumors, ~~prost~~ prostatic hyperctrophy.

Symptoms:

- Decreased kidney function.
- obstruction in the urinary tract.
- Blood in urine.
- Reduce urine output
- Dehydration.
- Detectable abnormal mass.
- pale skin.
- poor appetite.

~~Dig~~ Diagnosis:

- Routine laboratory test (creatinine and blood urea nitrogen)
- Ultrasound of the kidney helps to determine whether kidney problem is acute or chronic.
- Kidney biopsy.
- computed tomography scan.

Treatment:

- prevention of acute renal failure through support of blood pressure and blood volume.
- connection of fluid and electrolyte imbalances.

⊙ Dialysis which may be employed while the kidneys are in the recovery phase.

⊙ Low protein, high carbohydrate diet to minimize the formation of nitrogenous wastes.

❀ Chronic renal failure:

Progressive and irreversible loss of renal function over time, based on a gradual decline in the GFR and creatinine clearance, frequently leading to end stage renal disease. (ESRD)

CRF = CRI = CRD = CKD.

Multiple terms have been applied to chronic renal failure the National Kidney disease outcomes quality initiative (NKF KDOQI) has placed all of these terms with CKD. It encompasses the continuum of kidney dysfunction from mild kidney damage to kidney failure and includes end stage renal disease.

ESRD (END STAGE RENAL DISEASE):

A clinical stage or condition in which there has been an irreversible loss of renal function and these patients usually need to accept renal replacement therapy in order to avoid life threateing uremia.

UREMIA:

Uremia is the clinical and laboratory syndrome, reflecting dysfunction of all organ systems as a result of untreated or undertreated acute or chronic renal failure.

DIFFERENT STAGES:

Each patient is classified into one of the 5 following stages of CRF because management and prognosis varies according to the progression of damage.

Stage 1 → Kidney damage with normal on increased GFR.

Stage 2 → Mild reduction in GFR.

Stage 3 → Moderate reduction in GFR.

Stage 4 → Severe reduction in GFR.

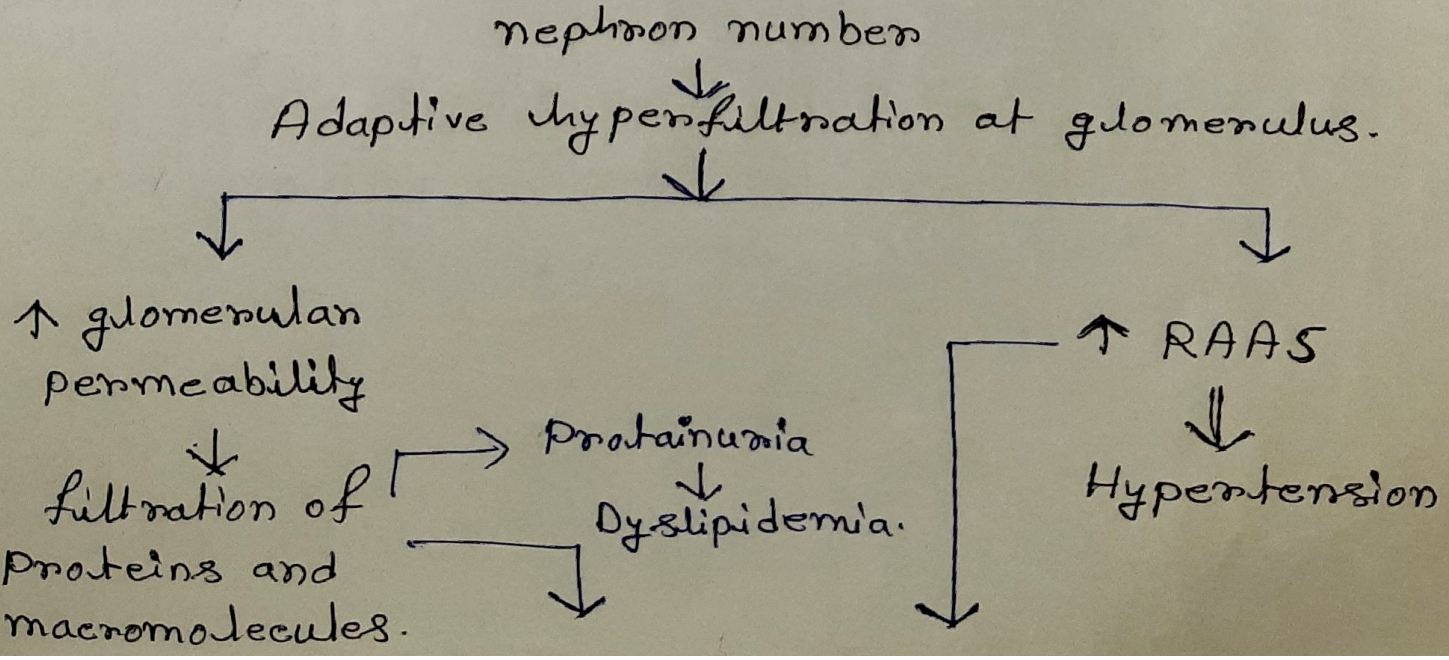
Stage 5 → Kidney failure GFR.

Etiology:

common causes of CRF-

i) Diabetes mellitus.
ii) glomerulonephritis.
iii) polycystic kidney.
iv) hypertension.

Pathogenesis of CRF:



Sub:

Nephrotoxic inflammation remodelling

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Tubulointerstitial fibrosis and 2° FSGS

↓ GFR

↓ urine output

Systemic complications

LATE In course

- Alterations In fluids AND
- MEtabolic acidosis.
- Anemia.
- Renal osteodystophy.
- complications of uremia.