

ETINOSA-OGBAHON OSASENAGA

18/MHS07/019

PHARMACOLOGY

PHS 212

ACUTE RENAL FAILURE

Acute renal failure is the abrupt or sudden stoppage of renal functions. It is often reversible within few days to few weeks. Acute renal failure may result in sudden life-threatening reactions in the body with the need for emergency treatment.

CAUSES

1. Acute nephritis (inflammation of kidneys), which usually develops by immune reaction
2. Damage of renal tissues by poisons like lead, mercury and carbon tetrachloride
3. Renal ischemia, which develops during circulatory shock
4. Acute tubular necrosis (necrosis of tubular cells in kidney) caused by burns, hemorrhage, snake bite, toxins (like insecticides, heavy metals and carbon tetrachloride) and drugs (like diuretics, aminoglycosides and platinum derivatives)
5. Severe transfusion reactions
6. Sudden fall in blood pressure during hemorrhage, diarrhea, severe burns and cholera
7. Blockage of ureter due to the formation of calculi(renal stone) or tumor.

FEATURES

1. Oliguria (decreased urinary output)
2. Anuria (cessation of urine formation) in severe cases
3. Proteinuria (appearance of proteins in urine) including albuminuria (excretion of albumin in urine)
4. Hematuria (presence of blood in urine)
5. Edema due to increased volume of extracellular fluid (ECF) caused by retention of sodium and water
6. Hypertension within few days because of increased ECF volume
7. Acidosis due to the retention of metabolic end products
8. Coma due to severe acidosis (if the patient is not treated in time) resulting in death within 10 to 14 days.

CHRONIC RENAL FAILURE

Chronic renal failure is the progressive, long standing and irreversible impairment of renal functions.

When some of the nephrons lose the function, the unaffected nephrons can compensate it. However, when more and more nephrons start losing the function over the months or years, the compensatory mechanism fails and chronic renal failure develops.

CAUSES

1. Chronic nephritis
2. Polycystic kidney disease

3. Renal calculi (kidney stones)
4. Urethral constriction
5. Hypertension
6. Atherosclerosis
7. Tuberculosis
8. Slow poisoning by drugs or metals.

1. Uremia

Uremia is the condition characterized by excess accumulation of end products of protein metabolism such as urea, nitrogen and creatinine in blood. There is also accumulation of some toxic substances like organic acids and phenols. Uremia occurs because of the failure of kidney to excrete the metabolic end products and toxic substances.

2. Acidosis

Uremia results in acidosis, which leads to coma and death.

3. Edema

Failure of kidney to excrete sodium and electrolytes causes increase in extracellular fluid volume resulting in development of edema.

4. Blood Loss

Gastrointestinal bleeding accompanied by platelet dysfunction leads to heavy loss of blood.

5. Anemia

Since, erythropoietin is not secreted in the kidney during renal failure, the production of RBC decreases resulting in normocytic normochromic anemia.

6. Hyperparathyroidism

Secondary hyperparathyroidism is developed due to the deficiency of calcitriol (1,25 dihydroxycholecalciferol). It increases the removal of calcium from bones resulting in osteomalacia.

Common features of uremia

- i. Anorexia (loss of appetite)
- ii. Lethargy
- iii. Drowsiness
- iv. Nausea and vomiting
- v. Pigmentation of skin
- vi. Muscular twitching, tetany and convulsion
- vii. Confusion and mental deterioration
- viii. Coma.