SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai

DEPARTMENT : CARDIO PULMONARY PERFUSION CARE TECHNOLOGY

COURSE NAME : PHARMACOLOGY

UNIT : HYPOKALEMIA

TOPICS : DEFINITION, CAUSE, IMPACT ON DRUG THERAPY, CLINICAL MANIFESTATIONS, DIAGNOSIS, MANAGEMENT

HYPOKALEMIA

- Hypokalemia refers to a lower-than-normal level of potassium in the bloodstream.

- Potassium is an essential electrolyte that plays a crucial role in various physiological functions, including muscle contraction, nerve function, and maintenance of fluid balance.

MEDICATIONS THAT CAN CAUSE HYPOKALEMIA

Diuretics: Certain diuretics, especially loop and thiazide diuretics, are known to increase potassium excretion through urine, leading to hypokalemia. Examples include furosemide (a loop diuretic) and hydrochlorothiazide (a thiazide diuretic).

Corticosteroids: Long-term use of corticosteroids, such as prednisone, can result in potassium loss.

Some Antibiotics: Aminoglycoside antibiotics, like gentamicin, may cause potassium depletion.

Beta-2 Agonists: Medications like albuterol, commonly used for respiratory conditions, can lower potassium levels.

Amphotericin B: An antifungal medication that can lead to potassium loss.

IMPACT ON DRUG THERAPY

- **Cardiac Medications:** Hypokalemia can increase the risk of cardiac arrhythmias, especially when patients are taking medications that affect the heart's electrical activity (e.g., digoxin). Monitoring potassium levels is crucial when using these drugs.
- **Antiarrhythmic Drugs:** Some antiarrhythmic medications, like quinidine, can exacerbate potassium loss or have reduced efficacy in hypokalemic conditions.

- **Muscle Relaxants:** Hypokalemia can enhance the effects of neuromuscular blocking agents, increasing the risk of muscle weakness and respiratory depression.

- **Insulin and Glucose Infusions:** Hypokalemia can be exacerbated by insulin therapy, and correction may be required when treating diabetic patients with insulin or intravenous glucose.

CLINICAL MANIFESTATIONS

- Muscle weakness or cramps
- Fatigue
- Irregular heart rhythm (arrhythmias)
- Constipation
- Abdominal cramping
- Polyuria (increased urination)
- Polydipsia (increased thirst)

DIAGNOSIS

- Diagnosis involves blood tests to measure serum potassium levels.

- Additional tests may be conducted to identify the underlying cause, such as urine tests, renal function tests, and electrocardiogram (ECG) to assess cardiac function.

MANAGEMENT

- **Potassium Supplements:** In cases of significant hypokalemia, potassium supplements may be prescribed to restore normal levels.

- **Dietary Changes:** Increasing dietary potassium intake through potassium-rich foods may be recommended.

- **Monitoring:** Regular monitoring of potassium levels is essential, especially when patients are on medications that may affect potassium balance.

- **Adjusting Medications:** If possible, adjusting or discontinuing medications that contribute to potassium loss may be considered.

TECHNICIAN ROLE

- Monitoring: Regular monitoring of serum potassium levels is essential.
- Cardiac Monitoring: Particularly important in cases of severe hypokalemia due to the risk of arrhythmias.
- Caution with Rapid Correction: Correcting potassium levels too quickly can also pose risks, and healthcare providers need to carefully manage the rate of correction.

ASSESSMENT

- What is Hypokalemia ?
- What is the Diagnosis of Hypokalemia ?