

ACIDOSIS & ALKALOSIS ELECTROLYTE IMBALANCE



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Shaping Lives...
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ACIDOSIS

Acidosis is a medical condition in which there is an excessive accumulation of acid in the body, leading to a decrease in blood pH. Normally, the body maintains a balance between acids and bases in the blood, with a pH of around 7.4. When this balance is disrupted, and the blood pH drops below 7.35, acidosis can occur.⁰

CAUSES: Medications (antibiotics), changes in diet or lifestyle, Dialysis.

TYPES:

Respiratory acidosis: This occurs when there is an accumulation of carbon dioxide in the body due to impaired lung function.

Metabolic acidosis: This is caused by an accumulation of acidic substances in the blood, which can result from conditions such as diabetes, kidney disease, and lactic acidosis.

Ketoacidosis: This is a type of metabolic acidosis that occurs when the body is unable to properly use glucose for energy and starts to break down fat.

Poisoning: Ingestion of certain toxins or drugs can cause metabolic acidosis.

Dehydration: Severe dehydration can lead to metabolic acidosis.

Inherited metabolic disorders: Certain genetic conditions can cause a buildup of acid in the body.

Severe infections: Serious infections can lead to lactic acidosis.

Pathogenesis of Respiratory acidosis:

- The respiratory system is responsible for exchanging gases between the body and the environment. During normal respiration, the body takes in oxygen and releases carbon dioxide, which is then exhaled.
- Due to Impaired lung function, Central nervous system depression, Airway obstruction and Chest wall disorders, Respiratory acidosis occurs.
- In this condition, body's respiratory system is unable to remove enough carbon dioxide (CO₂) from the blood, leading to an accumulation of CO₂ and a decrease in blood pH.

ALKALOSIS

Alkalosis is a medical condition in which there is an excessive accumulation of base or a decrease in acid in the body, leading to an increase in blood pH. Normally, the body maintains a delicate balance between acids and bases in the blood, with a pH of around 7.4. However, when this balance is disrupted, and the blood pH rises above 7.45, alkalosis can occur.

CAUSES: Medications (antibiotics), Certain diseases, changes in diet or lifestyle, Dialysis.

TYPES:

Respiratory alkalosis: This type of alkalosis occurs when the lungs eliminate too much carbon dioxide from the body, leading to a decrease in carbonic acid and an increase in blood pH. Respiratory alkalosis can be caused by hyperventilation, which can result from anxiety, fever, or high

altitude, among other factors.

Metabolic alkalosis: This type of alkalosis occurs when the body loses too much acid or gains too much base, leading to an accumulation of alkaline substances in the blood and an increase in blood pH. Metabolic alkalosis can be caused by conditions such as vomiting, which can result in a loss of stomach acid, or by the use of certain medications, such as diuretics.

Pathogenesis of Respiratory Alkalosis:

- The respiratory system is responsible for exchanging gases between the body and the environment. During normal respiration, the body takes in oxygen and releases carbon dioxide, which is then exhaled.
- Due to Impaired lung function, Central nervous system depression, Airway obstruction and Chest wall disorders, Respiratory alkalosis occurs.
- In this condition, body's respiratory system eliminate too much carbon dioxide from the body, leading to a decrease in carbonic acid and an increase in blood pH.

ELECTROLYTE IMBALANCE

Electrolyte imbalance is a condition in which there is an abnormal concentration of electrolytes in the body's fluids, leading to disruptions in normal cellular function such as fluid balance, nerve and muscle function, and pH regulation.

- Electrolytes are minerals in the body that carry an electric charge and are essential for the proper functioning of cells and tissues.

- The major electrolytes in the body include sodium, potassium, calcium, magnesium, chloride, bicarbonate, and phosphate.
- To restore normal electrolyte levels in the body, we should go for oral or intravenous fluids and electrolyte replacement therapy.

Common symptoms include **muscle weakness or cramps, fatigue, irregular heartbeat, confusion, seizures, and nausea.**

CAUSES:

1. **Dehydration:** When the body loses more water than it takes in, either through sweating, vomiting, diarrhea, or other causes, the concentration of electrolytes in the body becomes more concentrated, leading to an electrolyte imbalance.
2. **Over hydration:** When the body takes in more fluids than it can eliminate, the concentration of electrolytes in the body becomes diluted, leading to an electrolyte imbalance.
3. **Medications:** Certain medications, such as diuretics, laxatives, and antacids, can affect the balance of electrolytes in the body.
4. **Underlying health conditions:** Health conditions such as kidney disease, liver disease, and heart failure can affect the body's ability to regulate electrolyte levels.
5. **Dietary imbalances:** An imbalanced diet that is too high or too low in certain electrolytes can also lead to an electrolyte imbalance.

