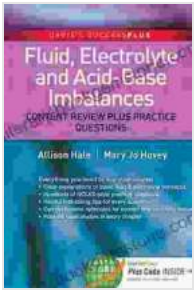
Fluid, Electrolyte, and Acid-Base Imbalances: Content Review Plus Practice

Fluid, electrolyte, and acid-base imbalances are common clinical problems that can lead to significant morbidity and mortality. These imbalances can occur in a variety of settings, including:



Fluid, Electrolyte, and Acid Base Imbalances Content Review Plus Practice Questions (DavisPlus) by Allison Hale

4.7 out of 5

Language	: English
File size	: 15246 KB
Screen Reader	: Supported
Print length	: 360 pages
X-Ray for textbooks	: Enabled

* Gastrointestinal disorders (e.g., vomiting, diarrhea) * Renal disorders (e.g., acute kidney injury, chronic kidney disease) * Endocrine disorders (e.g., diabetes mellitus, adrenal insufficiency) * Respiratory disorders (e.g., acute respiratory failure, chronic obstructive pulmonary disease) * Traumatic injuries * Burns

It is important for healthcare providers to be able to recognize and manage fluid, electrolyte, and acid-base imbalances in order to prevent serious complications.

Fluid Imbalances

Fluid imbalances can be classified as either hypovolemia (dehydration) or hypervolemia (fluid overload).

Hypovolemia occurs when there is a decrease in the total body water content. This can be caused by:

* Fluid loss (e.g., vomiting, diarrhea, sweating) * Inadequate fluid intake * Third space losses (e.g., burns, pancreatitis)

Hypovolemia can lead to a number of clinical manifestations, including:

* Hypotension * Tachycardia * Oliguria * Dry mucous membranes * Skin tenting * Decreased capillary refill time

Hypervolemia occurs when there is an increase in the total body water content. This can be caused by:

* Fluid overload (e.g., excessive intravenous fluid administration) * Fluid retention (e.g., in heart failure, renal failure)

Hypervolemia can lead to a number of clinical manifestations, including:

* Edema * Jugular venous distension * Hepatomegaly * Ascites * Shortness of breath

Electrolyte Imbalances

Electrolytes are minerals that are dissolved in body fluids. The most important electrolytes include:

* Sodium (Na^+) * Potassium (K^+) * Chloride (Cl^-) * Bicarbonate (HCO_3^-)

Electrolyte imbalances can occur when there is a change in the concentration of one or more of these electrolytes in the body. This can be caused by a variety of factors, including:

* Fluid imbalances * Gastrointestinal disorders (e.g., vomiting, diarrhea) * Renal disorders (e.g., acute kidney injury, chronic kidney disease) * Endocrine disorders (e.g., diabetes mellitus, adrenal insufficiency) * Medications (e.g., diuretics, potassium-sparing diuretics)

Electrolyte imbalances can lead to a number of clinical manifestations, depending on the specific electrolyte that is affected. Some of the most common clinical manifestations of electrolyte imbalances include:

* **Sodium** * Hyponatremia (low sodium): nausea, vomiting, headache, seizures, coma * Hypernatremia (high sodium): thirst, dry mucous membranes, muscle weakness, confusion * **Potassium** * Hypokalemia (low potassium): muscle weakness, fatigue, arrhythmias * Hyperkalemia (high potassium): weakness, numbness, tingling, arrhythmias * **Chloride** * Hypochloremia (low chloride): nausea, vomiting, muscle weakness * Hyperchloremia (high chloride): acidosis, dehydration * **Bicarbonate** * Acidosis (low bicarbonate): shortness of breath, fatigue, confusion * Alkalosis (high bicarbonate): nausea, vomiting, headache

Acid-Base Imbalances

Acid-base imbalances occur when there is a change in the pH of the blood. The pH of the blood is a measure of its acidity or alkalinity. A normal pH range is 7.35-7.45.

Acid-base imbalances can be classified as either acidosis (low pH) or alkalosis (high pH).

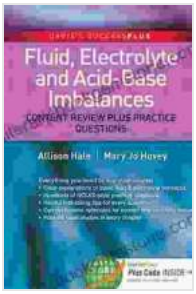
Acidosis can be caused by a number of factors, including:

* Increased production of acids (e.g., in diabetic ketoacidosis, lactic acidosis) * Decreased excretion of acids (e.g., in acute kidney injury)

Acidosis can lead to a number of clinical manifestations, including:

* Shortness of breath * Fatigue * Confusion * Coma

Alkalosis can be caused by a number of factors, including:



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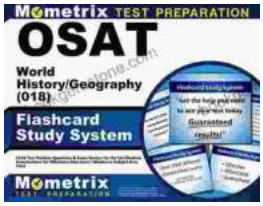

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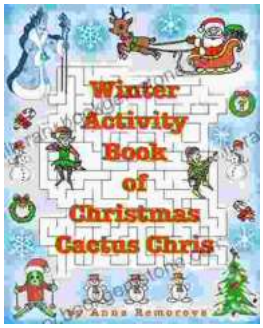

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