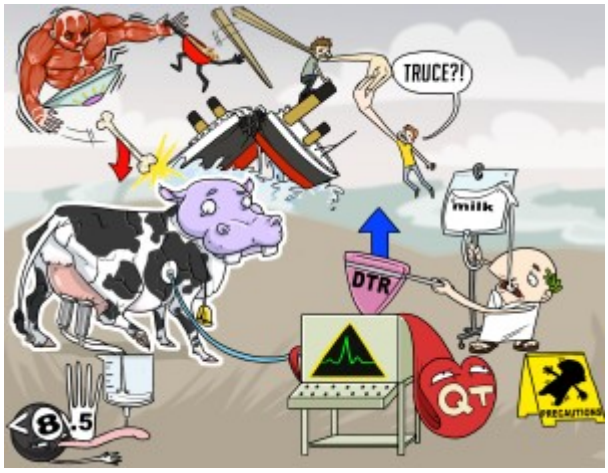
Hypocalcemia

Hypocalcemia is defined as low serum calcium levels, which can occur from a variety of factors such as chronic kidney failure, pancreatitis, sepsis, or other electrolyte imbalances. The basis for its signs and symptoms is a result of the increase in neuromuscular excitability.



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Muscle Spasms
Muscle-man Spaceship
Frequent, painful muscle spasms often in the calf or foot is one indicator of hypocalcemia. This is due to the fact that calcium regulates depolarization and the generation of action potentials.

Assessment

< 8.5 mg/dL Ca2+
Less Than (8) Ball (.5) Hand
Hypocalcemia is defined as a serum calcium level below 8.5 mg/dL.

Decreased Bone Density
Down-arrow Bones
Decreased bone density (osteoporosis) occurs as calcium is moved from bone storage sites. The bones become brittle and fragile, making them prone to breaking with even the slightest of trauma.

Tetany
Titanic
Tetany is characterized by spasms of the hands and feet, cramps, spasms of the voice box, and overactive neurological reflexes.

Chvostek's Sign
Chopsticks
Chvostek's sign is a sign observed in those with low calcium. To test for it, tap directly along the facial nerve, on or around the cheek and anterior to the ear, to trigger facial twitching of one side of the mouth, nose and cheek. Twitching of the facial muscles is a positive sign of hypocalcemia.

Trousseau's Sign
Truce-handshake
Trousseau's sign is a sign observed in those with low calcium. To test for it, begin by placing a blood pressure cuff around the upper arm, inflate the cuff to greater than the patient's systolic pressure, and keep it inflated for 1-4 minutes. Under these peripheral hypoxic conditions, a positive Trousseau's sign occurs when the hand and fingers go into spasm in palmar flexion.

Increased DTR
Up-arrow DTR-reflex-hammer
Low levels of calcium cause the muscles to contract more easily, leading to increased deep tendon reflexes. This is due to the fact that calcium affects contractility of muscle fibers.

ECG Changes
Delta ECG
Hypocalcemia results in ECG changes which includes a prolonged QT interval and prolonged ST segment. This can cause decreased myocardial function and increase the risk for developing abnormal rhythms resulting from increased cardiac cell excitability.

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QT Prolongation

QT-heart Prolonged

Hypocalcemia results in EKG changes which includes a prolonged QT interval and prolonged ST segment. This can cause decreased myocardial function and increase the risk for developing abnormal rhythms resulting from increased cardiac cell excitability.

Considerations

Oral and IV Replacement of Ca2+

Oral and IV Milk

Direct calcium replacement, through oral or IV routes, should be initiated to treat hypocalcemia. Calcium gluconate is often preferred over calcium chloride, as it is less necrotic to tissues.

Seizure Precautions

Caesar Precautions

Because excitable membranes of the nervous system and skeletal system are overstimulated, seizure precautions should be initiated. This includes keeping the bed in a low, locked position with the siderails up, ensuring that emergency equipment is at the bedside, and that IV access has been started.

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