Hypomagnesemia

Hypomagnesemia occurs when serum magnesium levels are below 1.5 mEq/L. Causes of hypomagnesaemia include diarrhea, vomiting, chronic alcoholism, and malabsorption syndrome. Other causes include NG suction, poorly controlled diabetes mellitus, and hyperaldosterone. Magnesium is an intracellular cation used to activate enzymatic reactions and maintain normal calcium and potassium balance. Clinical manifestations of hypomagnesemia include confusion, increased deep tendon reflexes, insomnia, and tachycardia. The patient may exhibit neuromuscular irritability characterized by seizures, muscle cramps, and tremors. Treatment for hypomagnesemia includes administering IV magnesium sulfate and increasing dietary intake of foods high in magnesium.



PLAY PICMONIC

Assessment

Confusion
Confucius
Decreased levels of serum magnesium depresses CNS function and affect the patient's mental clarity. Hypomagnesemia may cause occasional or frequent confusion and disorientation. Frequently assess the patient's neurologic status to monitor for increased confusion.

Increased Deep Tendon Reflexes (DTRs)
Up-arrow DTR-reflex-hammer
Deep tendon reflexes determines the muscle's ability to stretch while indicating proper functioning of the nervous system. Hypomagnesemia will increase neuronal impulses causing increased neuromuscular activity. This action will result in increased deep tendon reflexes.

Neuromuscular Irritability
Nerve-muscle-man
Magnesium helps regulate the nervous system. Hypomagnesemia causes neuromuscular irritability characterized by seizures, muscle cramps, and tremors. Certain assessment findings, like Chvostek's or Trousseau's sign (e.g. respectively: twitching of facial muscles and carpopedal spasm after inflation of a BP cuff around a forearm) may be present.

Seizures
Caesar
Low levels of magnesium may cause abnormal electrical activity in the brain. Disrupted brain electrical activity may result in seizures (refer to the Picmonic on "Seizure Precautions").

Muscle Cramps
Muscle Clamp
Magnesium helps facilitate muscle contraction and relaxation. Low levels of serum magnesium causes abnormal muscle contractions and lead to muscle cramps.

Tremors
Trimmer
Magnesium is necessary to help stabilize neuromuscular excitability and contractility. Low levels of serum magnesium decrease the threshold of axon stimulation and increase the speed of nerve conduction. Increased neuronal activity may trigger tremors.

Insomnia
Taped-awake-insomniac
Magnesium helps relax muscles, calm nerves, and decrease the affects of stress and anxiety. Patients with low levels of magnesium may have difficulty sleeping and develop insomnia. Hypomagnesemia may cause the patient to sleep less deeply or wake up frequently during the night.

Sign up for FREE at picmonic.com

Tachycardia

Tac-heart-card

A deficiency in magnesium may cause cardiac arrhythmias and tachycardia, most notably a condition known as "torsades de pointe.". Since magnesium is necessary for muscle contraction and relaxation, decreased levels affects the heart's ability to contract. Tachycardia occurs to compensate the heart's inability to control its electrical impulses. A small percentage of patients with hypomagnesemia experience hypertension.

Interventions

Magnesium Sulfate

Magnesium-magazine with Sulfur-match

Mild magnesium deficiency may be managed with oral supplements. In severe cases of hypomagnesemia, IV magnesium sulfate may be given. Since rapid infusion of magnesium may cause cardiac arrest, the drug is slowly administered using an infusion pump. Since the medication may cause respiratory depression, monitor the patient's respiratory status for symptoms for abnormal breathing patterns or decreased respiratory rate.

Foods High in Magnesium

Food made with Magnesium-magazines

To increase serum magnesium levels, encourage the patient to increase dietary consumption of foods high in magnesium or take a magnesium supplement, like magnesium oxide. Foods rich in magnesium include green vegetables, nuts, bananas, oranges, peanut butter, and chocolate.

Sign up for FREE at picmonic.com