Hypermagnesemia

Definition

- Serum Mg^{++} >2.3 mg/dL

Etiology:

- Insufficient excretion due to CKD
- Iatrogenic/excess intake due to overaggressive replacement, Magnesium-based laxatives/enemas use in CKD, Mg^{++} administration during preeclampsia/eclampsia treatment

Clinical manifestations:

Symptoms are either cardiovascular vs neuromuscular manifestations or hypocalcemia

- Plasma Mg^{++}8-7.2mg/dL: Nausea, flushing, headache, lethargy, drowsiness and hyporeflexia
- Plasma Mg^{++}2-12mg/dL: Somnolence, hypocalcemia, areflexia, hypotension, bradycardia and ECG changes
- Plasma Mg^{++} >12: Muscle paralysis leading to flaccid quadriplegia, apnea/respiratory failure, complete heart block, cardiac arrest

Evaluation:

- Order CMP, serum Mg^{++}
- Review patient history, clinical circumstances and medications

Management:

Treatment is tailored based on severity and clinical manifestations and renal function

- Asymptomatic patients: Cessation of Mg^{++} supplementation therapies
- Symptomatic patients: 1gram Calcium Gluconate IV over 10mins to antagonize Mg^{++}
- Moderate renal impairment (eGFR 15-45): Consider IV Isotonic fluid plus loop diuretic (e.g., Furosemide)

- Severe renal impairment (eGFR <15)/Symptomatic patients: Dialysis is the definitive therapy

> Key Points:

- Clinically relevant hypermagnesemia is rare and is usually due to excessive magnesium administration in patients with CKD or impaired magnesium excretion
- Severe hypermagnesemia may need dialysis

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