HYPERMAGNESEMIA

DEFINITION: Total serum Mg^{2+} levels greater than the normal range (1.5-2.3 mg/dL).

INCIDENCE IN CRITICAL ILLNESS: Rare in the absence of tocolysis.

ETIOLOGY:

- Decreased renal excretion of magnesium: Renal failure; lithium therapy; hypocalcemic hypercalcemia.
- Excessive intake: Tocolysis; antacids; laxative abuse; magnesium cathartics used to treat overdoses; Epsom salts (100% magnesium sulfate).

CLINICAL MANIFESTATIONS:

- Symptoms may occur with levels greater than 4.0 mg/dL.
- Cardiovascular: Bradycardia; hypotension; complete heart block; cardiac arrest.
- Metabolic: Hypocalcemia (possibly due to inhibition of PTH release); hyperkalemia.
- Neuromuscular: Decreased deep tendon reflexes; muscle paralysis, including respiratory depression; lethargy, somnolence, confusion and coma; ileus; urinary retention; parasympathetic blockade causing fixed and dilated pupils.

TREATMENT:

- There is no specific antidote for hypermagnesemia.
- Prevention: Patients with renal failure should not be given magnesium containing antacids or cathartics.
- Cardiac stabilization: Intravenous calcium.
- Renal replacement therapy: Intermittent hemodialysis corrects hypermagnesemia more rapidly than peritoneal dialysis or continuous renal replacement therapy.

KEY REFERENCES: