

and hypomagnesemia may cause hypocalcemia, seizures, and paresthesias independent of hypocalcemia and cause a broad array of neuromuscular, cardiovascular, and respiratory symptoms.

Differential Diagnosis

Differential diagnoses are listed in the following sections and in [Table 73-5](#).

Inadequate Intake

Inadequate intake of magnesium is common among alcoholics and the generally undernourished. It may occur as part of an intestinal malabsorption syndrome and may result from continuous vomiting or nasogastric suctioning. These situations are common in ICU settings and are often overlooked.

Excessive Renal Losses

Excessive renal losses of magnesium are common in clinical practice. Thiazide and loop diuretics cause renal magnesium losses, and saline infusion has a similar effect. Magnesium is lost by the kidney in response to aldosterone in primary hyperaldosteronism but more commonly in the secondary hyperaldosteronism associated with cirrhosis, volume depletion, congestive heart failure, and other common disorders. Osmotic diuresis, as occurs with poorly controlled diabetes mellitus, causes renal magnesium loss. Certain nephrotoxic drugs such as cisplatin, aminoglycoside antibiotics, and amphotericin induce proximal tubular injury and a severe form of renal magnesium wasting. Hypokalemia, hypercalcemia, and hypercalciuria also lead to renal magnesium excretion. Many diseases that lead to proximal tubular injury, such as

Fanconi's syndrome and interstitial nephritis, may lead to magnesium wasting.

Treatment

Magnesium can be replaced intramuscularly or intravenously. Usually, 24 to 48 mEq per 24 hours as magnesium sulfate is provided (see [Chapter 72](#)). Oral magnesium salts such as magnesium oxide are also available, but administering large doses of magnesium orally is difficult because of the cathartic effects of magnesium.

SUGGESTED READINGS

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