



Poison HOTLINE

1-800-222-1222

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Did you know

Valproic acid (VPA), either in therapeutic dosing or in overdose, can cause an increased serum ammonia concentration. L-carnitine (levocarnitine) has been shown to reduce ammonia concentrations and improve outcomes in patients with VPA toxicity.

L-carnitine is indicated in patients with elevated VPA concentrations >450 mg/mL with hepatotoxicity and hyperammonemia. Early intervention with IV carnitine has been associated with better patient outcomes. IV dosing is 100 mg/kg IV over 30 minutes followed by maintenance dosing of 15 mg/kg IV over 30 minutes every 4 hours.

For patient specific treatment recommendations for your poisoned patient, call the IPCC at **1-800-222-1222**.

Valproic Acid

Valproic acid (VPA) is an anticonvulsant used to treat a variety of seizure disorders. It is also commonly used to treat bipolar disorder, chronic pain, and as migraine prophylaxis. The mechanism of action of VPA is complex and the direct mechanism of its effects are not fully known. A major aspect of VPA toxicity is known to be depletion of carnitine ultimately resulting in impaired fatty acid metabolism, inhibition of the urea cycle, and hyperammonemia.

VPA induced hyperammonemic encephalopathy (deterioration in mental status and elevated ammonia) can develop as a complication of therapeutic use or in the setting of overdose. Central nervous system depression is the most common symptom following VPA overdose. Lethargy and sedation can progress to confusion, coma, and respiratory depression in severe overdoses. Seizures and cerebral edema are possible in severe toxicity. Cardiac manifestations including tachycardia, hypotension, and QT prolongation are also seen.

Evaluation following an overdose typically includes serial evaluations of blood VPA, AST, ALT, and ammonia concentrations as well as monitoring for EKG changes. Patients with significant toxicity may require additional labs. Treatment is primarily symptomatic and supportive care. Monitor vital signs and mental status in symptomatic patients. Intubation may be needed for significant CNS and/or respiratory depression. Hypotension usually responds to IV fluids, but vasopressors can be used for refractory hypotension.

Activated charcoal, including multiple doses, and carbapenem antibiotics have been used to decrease VPA concentrations through decreased absorption and reabsorption. Levocarnitine replacement is indicated for signs of impaired fatty acid metabolism (see sidebar). Hemodialysis may be indicated in severe overdose such as patients deteriorating despite supportive care or VPA concentrations >1000 mcg/mL.

Please contact the IPCC at 1-800-222-1222 to discuss patient specific recommendations regarding VPA toxicity or overdose.

*Sue Ringling, RN, BSN, CSPI
Certified Specialist in Poison Information*



Hotline Editor: Bryan Wilson, MD

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