IOWA POISON CONTROL CENTER

Poison HOTLINE

Partnership between UnityPoint Health and University of Iowa Hospitals and Clinics

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Did you know ……

The Iowa Poison Control Center has received numerous calls over the past few years in which the medications guaifenesin and guanfacine have been confused due to their similar sounding names. Guaifenesin is used as an expectorant in over the counter and prescription cough and cold medications. Guanfacine is an alpha-2 agonist which has been used for decades to treat hypertension, and its use has increased a great deal in the past few years as a treatment for ADHD. Guaifenesin ingestions are usually benign but guanfacine overdoses can cause bradycardia, hypotension and other serious symptoms.

POISON Help 1-800-222-1222

Intravenous Lipid Emulsion in Toxicology

Twenty percent intravenous lipid emulsion (20% Intralipid, which is made up of 20% soybean oil and 1.2% phospholipids) has been used successfully to treat local anesthetic (LA)-induced cardiovascular collapse. LA cardiotoxicity arises from blockade of sodium and potassium channels and leads to vasodilation, decreased myocardial contractility, cardiac conduction delays or blocks, and eventually vascular collapse.

The mechanism by which the lipid emulsion causes its beneficial effects is uncertain, but there are four hypotheses: (1) the lipid emulsion sequesters lipophilic LA's from the plasma and tissue, (2) it redistributes the fat-soluble LA's away from receptors, (3) it provides fatty acids for a myocardial energy source and / or (4) it opens calcium channels which increases intracellular calcium.

The efficacy of lipid emulsion to treat overdoses of local anesthetics has not undergone controlled trials and is not an FDA-approved use of 20% lipid emulsion. However, its use in patients who are in extremis from LA toxicity is reasonable when combined with standard resuscitative techniques.

There are several animal studies and multiple case reports which describe the use of 20% lipid emulsion in treating human overdoses of certain non-LA medications (beta blockers, calcium channel blockers, herbicides, cyclic antidepressants, antipsychotics, etc.). Given the beneficial effects of 20% lipid emulsion which are seen in severe LA toxicity, the use of 20% lipid emulsion to treat a patient who is *in extremis* (i.e. refractory hypotension, cardiac arrest, etc.) from an overdose of a lipid-soluble medication is not unreasonable. Again, this would constitute an "off-label" use of 20% lipid emulsion.

Only 20% lipid emulsion is used to treat LA-induced cardiovascular collapse. Other products containing a lipid emulsion, such as 10% intralipid or propofol, cannot be used for this purpose. Ensure the patient is not allergic to eggs as these products contain egg proteins. The lipid emulsion is given as an intravenous bolus followed by an infusion. The bolus may need to be repeated 1-2 times. For questions regarding the dosing of lipid emulsion, or for treatment advice, contact the experts at the Iowa Poison Control Center at 1-800-222-1222.

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