Fda regulations on lithium toxicity

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Some patients abnormally sensitive to lithium may exhibit toxic signs at serum concentrations that are considered within the therapeutic range [see Boxed Warning, Dosage and Administration...

Explanation: FDA has concluded that lithium is a narrow therapeutic index drug based on the following evidence: The range between the effective lithium concentrations and the concentrations...

Lithium, a monovalent cation similar to sodium with an unknown mechanism, was first approved by the U.S. Food and Drug Administration (FDA) as a mood-stabilizing medication for the treatment of mania in the 1970s[2].

This topic will review the diagnosis and management of acute and chronic lithium toxicity. The therapeutic use of lithium, side effects of routine lithium therapy, and other aspects of the management of patients with acute poisoning are discussed separately.

Clinically, the three main categories of lithium poisoning are as follows (seePresentation):

Lithium levels should be measured in symptomatic patients. However, levels may not correlate with clinical symptoms due to the kinetic profile of lithium. Multiple measurements may be indicated to evaluate the effects of treatment and in patients who have taken sustained-release tablets (seeWorkup).

Supportive therapy is the mainstay of treatment of lithium toxicity. Airway protection is crucial due to emesis and risk of aspiration. Seizures can be controlled with benzodiazepines, phenobarbital, or propofol. SeeTreatment.

Lithium has been used in medicine since the 1870s. Lithium was initially used to treat depression, gout, and neutropenia, and for cluster headache prophylaxis, but it fell out of favor because of its adverse effects. The US Food and Drug Administration (FDA) banned the use of lithium in the 1940s because of fatalities but lifted the ban in 1970.

The central nervous system (CNS) is the major organ system affected, although the renal, gastrointestinal (GI), endocrine, and cardiovascular (CV) systems also may be involved.

Lithium is available only for oral administration. It is almost completely absorbed from the GI tract. Peak levels occur 2-4 hours postingestion, although absorption can be much slower in massive overdose or with ingestion of sustained-release preparations.

Lithium is minimally protein bound (< 10%) and has an apparent volume of distribution of 0.6-1 L/kg. The

therapeutic dose is 300-2700 mg/d with desired serum levels of 0.6-1.2 mEq/L.

Lithium clearance is predominantly through the kidneys. Because it is minimally protein bound, lithium is freely filtered at a rate that depends on the glomerular filtration rate (GFR). Consequently, dosing must be adjusted on the basis of renal function. Individuals with chronic renal insufficiency must be closely monitored if placed on lithium therapy.