Lithium levels chart

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However,a study by Hsu et al indicated that in patients with euthymic bipolar disorder, lithium serum levels of 0.4-0.8 mmol/L significantlyinhibit the recurrence of major mood episodes, althoughthis effect was found only in patients aged 40-60 years. The adjusted hazard ratio (aHR) was 0.75, compared with 0.77 for levels of 0.8-1.2 mmol/L, with the aHR for levels below 0.4 mmol/L being used as reference. [4]

The clinical presentation and patient history dictate the necessity and frequency of measuring serum lithium concentrations. In patients beginning lithium pharmacotherapy, levels are typically checked twice weekly until serum lithium levels and patient symptoms are stable. Most patients achieve steady-state serum lithium concentrations within 5 days. [3]

Depending on the indication for lithium treatment, target serum concentrations vary. Patients with acute mania typically require a higher serum concentration than those taking lithium for prophylaxis against relapse. [3] Serum levels should be considered in tandem with the patient"s symptoms, and treatment is not considered failed unless a patient has surpassed the therapeutic range with continued manic symptoms. [3]

Elderly patients taking lithium should be more closely monitored for signs of lithium toxicity. Common ailments such as renal dysfunction, dehydration, and electrolyte abnormalities, as well as polypharmacy, contribute to decreased lithium clearance in elderly patients; as such, it is recommended that they be maintained on the lowest therapeutic dose, with a goal serum concentration between 0.4 and 0.8 mmol/L. Toxicity has been observed with levels as low as 1 mmol/L in older patients. [6]

Lithium toxicity should be considered in the context of both chronic intoxication and acute ingestion. Alterations in renal function such as dehydration (eg, acute gastroenteritis), diuresis, use of NSAIDs or ACE inhibitors, and lithium-induced nephrogenic diabetes insipidus can cause toxicity in patients with previously stable lithium dosing. [7, 8]

Ingestion of 1 mEq/kg (40 mg/kg) as a single dose will yield a serum level of approximately 1.2 mEq/L. Clinicians should maintain a high level of suspicion and a low threshold to treat patients with suspected lithium toxicity and signs of lithium intoxication, noting that serum lithium levels do not accurately predict toxicity and should not dictate treatment. [7]

In initiating therapy, monitoring serum lithium levels, and evaluating for toxicity, clinicians should consider collecting complete blood cell (CBC) count, electrolytes, and, in particular, indicators of renal function such as serum urea nitrogen and serum creatinine. [3, 6, 7]

Green-top tubes containing lithium heparin have been implicated in falsely elevated serum lithium levels, resulting in excessive and unnecessary hospitalizations and treatments. [9]

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Lithium has several mechanisms of action, including alteration of nerve and muscle cell membranes, alteration of serotonin and/or norepinephrine, and action at multiple steps in phosphatidylinositol metabolism. [3] Newer studies have implicated lithium in neurogenesis, as well as neural regeneration. [3]

Lithium is used in the treatment of both manic and depressive phases of bipolar disorder, as well as in unipolar depressive disorder to prevent future depressive episodes. Patients refractory to antidepressants may be treated with lithium as an adjunct to other drugs. [3, 10, 11]

Given its use in treating bipolar and unipolar depression, physicians should be aware of the potential for lithium toxicity in purposeful toxic ingestions. [12]

Lithium heparin-containing tubes can result in falsely elevated serum lithium levels. [9] If serum lithium levels are significantly higher than expected, physicians should consider confirming with a repeat specimen in the appropriate blood collection tube and treating patients based on their clinical features.