

Consider chronic lithium poisoning in patients treated therapeutically with lithium who present with neurological symptoms or signs

See 'Lithium(Li)- Acute Ingestion' guideline if the patient is taking lithium therapeutically + presents after an acute ingestion

Toxicity / Risk Assessment

Neurotoxicity is the predominant feature: degree of CNS

toxicity correlates approximately with lithium concentration

Increased risk of lithium related neurotoxicity with:

- Increasing doses of lithium
- Acute / chronic renal impairment
- Significant fluid or Na⁺ depletion
- Drugs causing ↓GFR: ACE inhibitors, A2RB, NSAIDs, diuretics
- Elderly, nephrogenic diabetic insipidus (NDI), thyroid dysfunction, hyperparathyroidism (↑Ca²⁺)

Clinical features: (insidious onset)

Mild: tremor (can be present at therapeutic Li concentration), nausea, diarrhoea, hyperreflexia

Moderate: drowsy, confusion, ataxia, increased muscle tone

Severe: coma, seizures, ↓BP, bradycardia, ↑QT, myoclonus

Metabolic: ↑/↓Na⁺, ↑Ca²⁺, nephrogenic DI

Endocrine: NDI, thyroid dysfunction

Long-term complications: Cerebellar / cognitive impairment

Management Treat underlying cause (e.g. sepsis/renal failure), strict fluid/electrolyte management and enhance lithium elimination

- Replace fluid loss with crystalloid (Consider normal saline if hyponatremic)
- Cease lithium and any nephrotoxic medications (ACEIs, A2RB, NSAIDs, diuretics)
- Optimize renal function, aim for urine output 1-2 mL/kg/hour
- Monitor electrolytes and fluid status (strict input and output). Large outputs are suspicious for NDI
- Monitor lithium concentrations 6 to 8 hourly. Check thyroid function.

Indications for extracorporeal elimination:

- Haemodialysis should be considered (discuss with toxicologist) for any patient with features of severe toxicity (acute ↓ level of consciousness, confusion, seizures, arrhythmia) **regardless** of Li concentration
- Factors that should be considered and may lower threshold for haemodialysis:
 - Co-existing renal impairment
 - Raised lithium concentration and confusion with no other cause
 - Co-existing dehydration, significant electrolyte abnormalities

- **Endpoint:** lithium concentration < 1.0 mmol/L and clinical evidence of improvement

- Toxicity may take days/weeks to improve even after lithium concentration has become <1mmol/L

Disposition

- All patients with chronic toxicity are likely to require inpatient management for >24 hours
- Patients with severe neurological features require admission to an HDU/ICU with access to extracorporeal elimination