

Lithium Intoxication

Prevention, causes, and treatment



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Lithium intoxication – Causes

and Prevention

- accidental overdose
- intentional overdose
- ➔ chronic overdose
- lack or loss of water
- lack of sodium

- insufficient drinking
- sweating, e.g. heat, fever, hard work
- diarrhea
- vomiting

regular monitoring of lithium serum level:
1-2 x per wk in the initial phase or after change of dose or concomitant medication;
at least every 3 months in long-term treatment

- ➔ start / dose-increase of interacting drugs
- acute renal disease / renal insufficiency

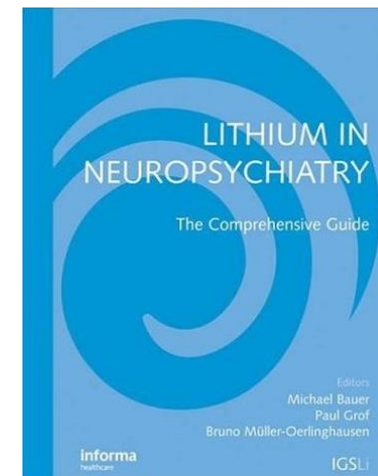


information and education of patients about symptoms of intoxication
 (→ stop lithium; immediate serum level assessment)

Table 40.1 Symptoms and blood levels in chronic lithium intoxication (from references 8, 13, 14, 16, 27, 36)

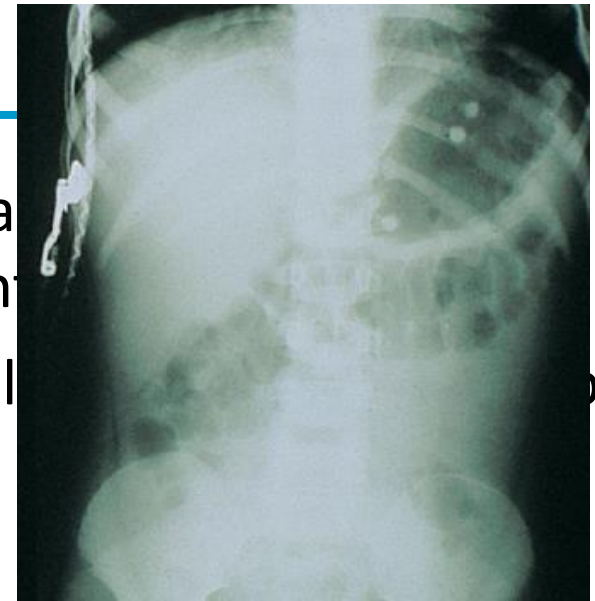
System	Mild (according to reference 27) (1.5–2.5 mEq/l)	Serious (2.5–3.5 mEq/l)	Life-threatening (> 3.5 mEq/l)
Neurologic	Fine tremor Apathy Fatigue Muscle weakness Hyperreflexia Incontinence Gait abnormality	Coarse tremor Dysarthria, slurred speech Tinnitus Ataxia Hypertonia Myoclonus	Stupor Seizures Coma Fasciculations Spasticity Rigidity Choreoathetosis Paresis Paralysis
Gastrointestinal	Nausea Vomiting Diarrhea	Nausea Vomiting Diarrhea	Nausea Vomiting Diarrhea
Cardiovascular	T-wave changes, bradycardia Sinoatrial block, atrioventricular block I°	T-wave changes, bradycardia Sinoatrial block, atrioventricular block I° QRS prolongation	T-wave changes, bradycardia Sinoatrial block, atrioventricular block I° Hypotension, collapse Ventricular dysrhythmias
Renal			Renal failure

Reference:
**Martens F. Lithium
 intoxication: signs
 and treatment.**
 In:



Lithium intoxication – Treatment

- symptoms often unspecific – difficult to diagnose lithium intoxication if it is unknown that the patient is on lithium
- stop lithium and diuretics; in case of neuroleptics too
- ECG monitoring
- lithium blood level every 2 to 4 hours (until levels are below the toxic range)
- creatinine, blood urea, chloride, sodium, potassium
- maintaining diuresis with normal saline (0.9% NaCl) infusions
- gastric lavage/endoscopy if intoxication < 1 hour
- intensive care unit in case of decreased consciousness, confusion, seizures, renal failure, cardiovascular decompensation
- benzodiazepines for treating seizures
- hemodialysis



Lithium intoxication – Treatment

Hemodialysis

- method of choice to eliminate lithium
- lithium is perfect: low molecular weight, no protein binding, good water solubility
- reduction rate about 1mmol/l (mEq/l) per 4 hours
- hemodialysis often needs to be repeated because of rebound by intracellular lithium

Indication

- still controversial
- immediately (irrespective of lithium level) in case of coma, seizures, respiratory or renal failure, deteriorating mental status
- immediately if lithium level > 3.5-4 mmol/l
- if lithium levels of > 2.5 mmol/l rise or do not fall after 8-12 hours
- if lithium level > 2.5 mmol/l and prominent neurological symptoms or renal insufficiency
- in case of doubt: pro hemodialysis, which is very effective





Lithium, Missouri. Population: 89 (2010 census)