PP-010 https://doi.org/10.5080/61upk.ozt508

THERAPEUTIC-LEVEL LITHIUM NEUROTOXICITY: A CASE REPORT

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OBJECTIVE: Lithium remains a first-line mood stabilizer for the acute and maintenance treatment of bipolar disorder. However, its narrow therapeutic index and potential for neurotoxicity warrant close monitoring. Although toxicity is typically associated with elevated serum lithium levels, neurotoxic effects may also occur within the therapeutic range, a condition referred to as therapeutic-level lithium neurotoxicity or chronic lithium neurotoxicity.

CASE: (The patient consent must be provided and specified with appropriate terms). A 61-year-old woman with a 15-year history of bipolar disorder, treated with long-term lithium, presented with a one-month history of insomnia, speech slowing, depressive mood, irritability, and cognitive impairment. Mental status examination revealed confusion, apathy, psychomotor slowing, and reduced speech output. Neurological examination demonstrated prominent generalized tremor and confusion. Her medications included lithium 600 mg/day, quetiapine, aripiprazole, and propranolol.

Laboratory investigations showed a serum lithium level of 0.63 mEq/L, within the therapeutic range, with normal renal and thyroid function tests and unremarkable routine biochemistry. No alternative medical or neurological etiology was identified. Lithium-induced neurotoxicity was suspected, and lithium was discontinued.

Antipsychotic treatment was adjusted. Within one week, the patient exhibited complete resolution of tremor and confusion, with normalization of sleep and cognitive functioning.

Informed consent: Written and verbal informed consent was obtained from the patient for publication of this case.

DISCUSSION: Chronic lithium exposure may result in central nervous system accumulation, and brain lithium concentrations do not always correlate with serum levels. Elder age and polypharmacy may increase susceptibility to neurotoxicity.

Previous reports and pharmacokinetic studies have described similar discrepancies, emphasizing age-related renal decline, blood–brain barrier alterations, and drug–drug interactions as contributing factors. This case underscores the importance of prioritizing clinical assessment over serum lithium concentrations alone. Clinicians should maintain a high index of suspicion for lithium neurotoxicity in elderly patients, even when serum levels are in therapeutic range.

Keywords: Bipolar disorder, neurotoxicity, lithium, therapeutic-level toxicity