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Lithium intoxication – dialysis use

Intoxicación por litio – uso de diálisis

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Dear Editor:

Lithium carbonate is utilized to manage bipolar disorders as a mood-stabilizing medication, while the intoxication causes tremor, ataxia, confusion, hyperreflexia, myoclonus, dysarthria, and seizures, besides cardiovascular, gastrointestinal, renal and endocrinological symptoms; the syndrome of irreversible lithium-effectuated neurotoxicity (SILENT) means persistent symptoms after the stop of this drug use, with manifestations of brainstem and cerebellar dysfunctions, extrapyramidal disorders, dementia, and some atypical presentations (Bystrzyński *et al*., 2025). Atypical neuroleptic malignant syndrome (NMS), which is a rare and potentially life-threatening condition associated with the typical antipsychotics, may be due to lithium (Duhan *et al*., 2025); lithium often causes neurological or renal side effects, but cardiac are rare (Heidari *et al*., 2025). The utilization of intravenous 0.9% saline solutions and dialysis can represent useful options in the management of high blood levels of lithium (Medina-Pedraza & Tagle-Vargas, 2025). Hemodialysis for severe toxicity is based on: renal failure and lithium level > 4.0 mEq/L; level > 5.0 mEq/L; marked mental confusion; low consciousness level; seizures or malignant arrhythmias; or time to reduce lithium to < 1.0 mEq/L > 36 hours (Pineda *et al*., 2025). The use of lithium carbonate extended-release tablets over the prescribed daily dosage concomitantly with the use of other types of mood stabilizers may predispose to severe tremors, impaired consciousness, and cardiac arrhythmias, besides circulatory shock (Wang *et al.,* 2025). We read the interesting case study published in this Journal by Medina-Pedraza & Tagle-Vargas (2025) of a 70-year-old woman diagnosed with bipolar disorder controlled by lithium carbonate for over 20 years and more recently presenting with nausea, vomiting, diarrhea, slowed speech, and tremors. Blood determinations showed lithium: 2.6 mEq/L, creatinine: 1.23 mg/dL, and urea: 32 mg/dL; the electrocardiogram revealed sinus bradycardia with normal QT interval; the use of lithium was suspended, and she underwent 0.9% saline solution 2000 mL, resulting in the normalization of urea and creatinine levels, besides the lithium levels of 2.1 mEq/L, at the control after 12 hours. Due to persistent neurological alterations, hemodialysis was performed to remove the lithium, which occurred after six sessions with levels of 0.14 mEq/L; her discharge was one week later. The aim of the following comments on the literature from 2025 is to emphasize lithium toxicity. Bystrzyński *et al* (2025) reported a 62-year-old man with bipolar disorder under chronic lithium therapy, and a previous myocardial infarction, admitted with confusion, apathy, and walking disability after 5 days of infection and high fever, treated by high doses of non-steroidal anti-inflammatories. He had elevated levels of lithium, and after hydration plus lithium cessation (and normal levels), there was dysarthria, dysphagia, chorea, limb and trunk ataxia, besides the inability to sit and walk. After the lithium cessation, he underwent olanzapine to control the bipolar disorder; whereas chorea, speech, motor skills, and swallowing presented gradual improvement in two weeks. The authors emphasized the case of SILENT classical occurrence with two months duration, and the risk factors for lithium intoxication as impaired excretion due to renal dysfunction, dehydration, infection, fever, drugs increasing lithium levels as non-steroidal anti-inflammatories, thiazide and loop diuretics, or spironolactone, besides angiotensin-converting enzyme inhibitors. Duhan *et al* (2025) described a 42-year-old man who had schizoaffective and bipolar disease with mentation change due to lithium toxicity, and no improvement after dialysis and a normal lithium level. His usual daily medications were aripiprazole, benztropine, hydroxyzine hydrochloride, buprenorphine, and lithium 300 mg twice daily; due to suspicion of atypical NMS, he used bromocriptine and intravenous normal saline, but worsened to a complete loss of consciousness; then, dialysis was initiated to manage the lithium toxicity because of non-resolution with fluids. Diagnosis of atypical NMS was established, and at his

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discharge on day 18, his mentation had improved to baseline, he was using aripiprazole twice daily, and lithium was discontinued; further discussion about initiation or alternative medication was in charge of his outpatient psychiatrist. Heidari *et al* (2025) reported an 80-year-old woman who presented a loss of consciousness and severe sinus bradycardia needing insertion of a pacemaker, and under lithium use without supervision; serum level confirmed lithium intoxication, and the drug discontinuation resolved the disorders. The authors highlighted that lithium toxicity can be associated with diverse cardiac disturbances, which may evolve overlooked and include T-wave inversion, sinoatrial block, PR interval prolongation, QT prolongation and or dispersion, in addition to ventricular tachyarrhythmias. They commented on the caution of healthcare workers when treating a patient with lithium, because of the narrow therapeutic range of the drug; being attentive about diverse manifestations of the intoxication, with special caution about cardiac manifestation, that are rare but life-threatening. Pineda *et al* (2025), conducted a multicenter cohort study including 327 patients over 17 years of age, diagnosed with lithium poisoning and treated from 2012 to 2022, in accordance with the current recommendations from the Extracorporeal Treatments in Poisoning (EXTRIP). The mean age was 61 (48-69) years, 64.5% were females, 49.4% had chronic intoxication, about 4.2% had moderate-severe renal failure, the lithium level at admission was 2.14 mEq/L, with a peak level of 2.32 mEq/L; 292 patients (89.3%) had at least one symptom, mainly confusion (35.5%). Only 81 patients (24.8%) had hemodialysis, 184 (56.3%) required hospitalization, while 47 (14.4%) needed an intensive care unit admission, and 11 patients (3.4%) died. The adherence to EXTRIP was 68.1%, from 84 patients with EXTRIP criteria for hemodialysis, 34 (39.5%) underwent it. The adherence to the EXTRIP recommendations for hemodialysis was low (approximately 25% of cases for which it was indicated); this study demonstrates that the indication for this modality of management in clinical practice appears to be more influenced by lithium levels determination. Wang *et al* (2025) reported the case of a patient with bipolar affective disorder who had a blood lithium level of 6.08 mEq/L after utilizing lithium carbonate sustained-release tablets beyond the prescribed dosage daily, besides the concurrent administration of another kind of mood stabilizer. His lithium poisoning gave the origin to the development of impaired consciousness, coarse tremors, in addition to cardiac junctional rhythm, followed by severe hemodynamic disorder, and shock. With the supportive treatment and hemodialysis, clinical manifestations were all improved; the authors emphasized the need for better prevention of lithium poisonings. Concluding, single case studies can contribute, enhancing the awareness and suspicion index among non-specialist healthcare workers about less frequent and challenging conditions.

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