



Salar de Uyuni, the world's largest salt flat, is exceptionally rich in lithium

**Background:**

Lithium is a monovalent cation currently used in bipolar disorders, major depression or migraine non responsive to usual treatments. This drug has a narrow therapeutic index and in reason of that patients treated with lithium are exposed to a significant risk of intoxication often due to overdose or drug accumulation for acute renal failure. Nonetheless lithium has a wide number of interactions with drugs that influence renal clearance, Na<sup>+</sup>/K<sup>+</sup> pump function or neural cells metabolism. Lithium poisoning manifests as a wide variety of gastrointestinal, cardiac and neurologic symptoms. Lethality in course of lithium intoxication, even if rare, is strictly related to severity of neurologic disorders. Serum dosage of the ion, available in most of laboratory, increases safety profile of the drugs but has also important limitations: plasma lithium concentrations not always correlate with severity of clinical signs, which remain the cornerstone for defining patient’s therapeutic path (need for admission, hemodialysis or treatment in intensive care unit).

**Case report:**

We report a case of a 78 years old man affected to bipolar disorders in lithium therapy who accessed to emergency room for confusion, spatial disorientation, lapses in time and choreiform dystonic movements of the limbs. Familiars reported that the patient had decrease of appetite, poor fluid intake for about twenty days. He had an history of hypertension treated with ARBs and (angiotensin II receptor blockers) and hydrochlorothiazide, diabetes mellitus treated with metformin.

Metabolic panel showed acute renal failure with rising in BUN (blood urea nitrogen) and mild hyponatremia; EKG was significant for first degree atrioventricular block. In reason of clinical sign and anamnestic assumption of lithium a toxic panel was request: plasma lithium concentration was 1.2 mEq/L, little above normal range. Patient was treated with suspension of lithium, ARBs and hydrochlorothiazide intake, intravenous normal saline infusion monitoring diuresis and clinical signs. We assisted to improvement of acute renal failure, hyponatremia and complete resolution of symptoms.

Anorexia, nausea, vomiting, diarrhea

Dizziness, fatigue, ataxia, tremor, confusion, lapses in time

Sinus bradycardia, atrioventricular block, QT prolongation, flat or even inverted T waves

Nephrogenic diabetes insipidus, acute tubular necrosis

Hypothyroidism

Skin rash, psoriasis, acne

Leukocytosis

Weight gain

Alopecia

Signs and symptoms related to acute and chronic lithium intoxication

↑ serum lithium conc.	↓ serum lithium conc.
Thiazide diuretics	Theophylline
NSAIDs except aspirin	Potassium sparing diuretics
Corticosteroidi	Osmotic diuretics
ACE-I, ARB	
Tetracyclines	
Metronidazole	

Drug interactions with lithium

**Conclusion & perspectives :**

Neurologic manifestations in patient who use lithium should be correlated with intoxication even more so in presence of risk factors such as dehydration or use of nephrotoxic drugs (ARBs, metformin, hydrochloride).