

A true dialytic urgency: lithium intoxication

Intoxicación por litio, una verdadera urgencia dialítica

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Lithium is a metal that has similar characteristics to sodium and potassium, but with a smaller size. It is administered to patients as lithium carbonate and a 300 mg tablet contains 8.12 mEq of lithium ion.¹

Lithium carbonate is one of the classic drugs that for several decades has proven to be effective in the control of excitation that occurs in patients with manic episodes and in the prevention of new crises in patients with bipolar disorder.¹ In Colombia it is also managed mainly by psychiatrists due to its clinical indications and also taking into account its cost-effectiveness.

The therapeutic range of this drug varies according to the procedure used by the laboratory, but it usually ranges between 0.7 and 1.2 mEq/L. From the pharmacokinetic and pharmacodynamic points of view, its absorption is complete, it does not bind to plasma proteins and is initially distributed in the extracellular fluid and then gradually in different tissues, being the central nervous system the most important. Since it is eliminated by the kidneys, it is a drug that can be cleared by treatments such as dialysis.

It is important to note that lithium carbonate is a drug with a narrow therapeutic margin, which explains why a patient may be under-medicated, which overdose or intoxicated with minimal adjustments in the dosage.^{1,2}

There are 3 major toxicity patterns and each one implies a different risk. Acute intoxication occurs most frequently in patients who are not under treatment with lithium; clinically, neurological symptoms predominate, which can range from hand tremor, stiffness, nystagmus and ataxia to altered level of consciousness and seizures. Acute intoxication on a chronic treatment is more serious and it can be due to accidental intake or a suicide attempt, in this type, the symptoms of neurotoxicity also prevail and chronic intoxication can occur when the dose is increased or when there is a decrease in renal function. The severity of the intoxication depends on the plasma concentrations.^{2,3}

In their report of clinical cases published in this issue, Montoya et al. describe a 77-year-old female with a baseline diagnosis of bipolar affective disorder, who was admitted to the emergency department with a predominantly neurological symptomatology associated with an infectious clinical picture and secondary acute kidney injury. In the paraclinical studies were found very high levels of lithemia, for which integral medical management was carried out, given by adequate hydration, reanimation, correction of electrolytes and antibiotic treatment; the woman was diagnosed with lithium intoxication, and therefore it was required to start early hemodialysis.

Factors that aggravate or predispose to acute lithium intoxication have been described in the literature, such is the case of previous chronic kidney disease, the use of diuretics, hydroelectrolytic disorders such as hyponatremia and dehydration or effective hypovolemia that can occur in patients with associated

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infectious conditions; heart failure, uncontrolled hypothyroidism and pregnancy are other factors that also have influence on this event.^{2,3} The patient described in the clinical case had several of such aggravating factors.

Currently, it is not discussed that hemodialysis continues to be the treatment of choice for lithium intoxication, with the aim of achieving a rapid decrease in serum lithium levels. The current techniques for this treatment allow an effective elimination of lithium using high efficiency dialyzers and dialysis bath with bicarbonate;⁴ however, the consensus recommendations for their use are controversial regarding its beginning and with reference to the lithemia values and the renal function of the patient.⁵ On the other hand, it is also clear that if the patient persists with signs of neurotoxicity and has not responded to the initial medical management, it should be considered to start hemodialysis early, as reported in the literature.^{4,5}

It should be taken into account that after lithium intoxication, the most important sequel that can occur is the syndrome of irreversible lithium-effectuated neurotoxicity (SILENT). It is an alteration that can occur even with therapeutic drug levels and that can leave patients with persistent neurological sequelae.

On the other hand, it is important to highlight that not only the acute renal failure with signs of overload, metabolic acidosis, hyperkalemia and uremia are indications for urgent dialysis; there are also extrarenal causes that deserve to be considered as true dialytic emergencies and lithium intoxication is one of the most important to be taken into account.

Referencias

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