

Lithium Poisoning: A Case Report of Intentional Overdose

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Abstract:

Lithium poisoning is a critical medical emergency associated with significant morbidity and mortality. We present a case of lithium poisoning in a 41-year-old female with a history of bipolar disorder who ingested a large quantity of lithium tablets in a suicide attempt. The patient presented with symptoms of lithium toxicity, including tachycardia, nystagmus, dyspnea, and tremors. Prompt medical intervention, including hydration and close monitoring, led to successful management of the toxicity. Psychiatric consultation was provided to address underlying mental health issues contributing to the overdose.

Keywords: lithium poisoning; intentional overdose; suicide attempt

Introduction

Lithium poisoning is a serious medical emergency that requires prompt recognition and intervention. This case highlights the importance of early medical intervention, including hydration and supportive care, in the successful management of lithium toxicity. Psychiatric evaluation and support are essential components of the management of patients with lithium poisoning to address underlying mental health issues and prevent future suicide attempts.

Case

A 41-year-old female with a known history of bipolar disorder presented to the emergency unit after ingesting approximately 95 tablets of lithium carbonate (lithuril 300 mg) in a suicide attempt following an argument with her husband. On examination, the patient exhibited tachycardia, right horizontal nystagmus, dyspnea, and tremors. Initial laboratory investigations revealed a serum lithium level of 2.63 mmol/L (N 0.8-1.2 mmol/L) and a potassium level of 4.7 mmol/L. An electrocardiogram showed sinus tachycardia.

Upon arrival at the emergency unit, the patient underwent a thorough evaluation, including history-taking, physical examination, and laboratory investigations. Immediate interventions included the insertion of a Foley catheter and initiation of bolus intravenous hydration with normal saline. The patient was admitted to the intensive care unit (ICU) for close monitoring and management of lithium toxicity. Within one hour of admission, serum lithium levels decreased to 1.63 mmol/L without the need for hemodialysis. She remained stable with normal urine output and was observed in the ICU for two days. During hospitalization, the patient received psychiatric consultation and support.

The patient was discharged with psychiatric follow-up to address underlying mental health issues contributing to the suicide attempt. There were no complications during hospitalization, and the patient did not report any adverse events upon discharge.

Discussion

Lithium poisoning represents a severe medical emergency with potentially life-threatening consequences, as demonstrated in this case [1] [2]. Lithium is a cornerstone of treatment for bipolar disorder and other mood disorders, owing to its mood-stabilizing properties. However, its narrow therapeutic index means that even small deviations from the therapeutic range can lead to toxic outcomes[3]. Lithium poisoning, particularly in cases of intentional overdose, presents significant morbidity and mortality risks. Early recognition and intervention are essential to prevent complications such as permanent neurological damage, renal failure, and even death [4].

Lithium toxicity is known to affect multiple organ systems, primarily impacting the neurological, cardiovascular, and renal systems. Neurological symptoms are typically the first to appear, often manifesting as tremors, confusion, ataxia, and nystagmus [5]. These symptoms serve as early warning signs of potentially severe toxicity and require immediate attention. Cardiovascular complications, while less frequent, include arrhythmias, tachycardia, and QT prolongation, all of which can exacerbate the patient's condition and complicate management [6]. In addition, renal function plays a pivotal role in both the onset and resolution of lithium toxicity, as lithium is primarily excreted through the kidneys. Patients with renal impairment are particularly vulnerable, as their reduced ability to clear lithium from the body can result in prolonged toxicity [7].

The clinical literature underscores the importance of early intervention in improving outcomes for lithium toxicity [7]. Continuous monitoring of serum lithium levels, particularly in the acute phase, is essential for tracking the progression of toxicity and guiding treatment decisions. Recent studies emphasize the critical role of supportive care, with intravenous hydration being the mainstay of treatment in moderate cases. Hydration promotes renal excretion of lithium, helping to lower serum levels and alleviate toxic effects [8]. Hemodialysis is generally reserved

for cases where serum lithium levels exceed 2.5 mmol/L or when the patient's renal function is compromised [9] [10].

Intentional overdose with lithium also highlights the importance of psychiatric care in managing lithium poisoning. While lithium is highly effective in preventing suicidality in patients with mood disorders, it can paradoxically become a tool for suicide attempts when taken in excessive quantities [6]. This dual nature of lithium underscores the need for comprehensive psychiatric evaluation and long-term follow-up, particularly in cases of intentional overdose [11]. The involvement of a psychiatric consultant is essential in addressing the underlying mental health conditions that may have contributed to the overdose [12]. Studies have shown that psychiatric intervention following an overdose can significantly reduce the risk of recurrence and improve adherence to treatment regimens [13].

The management of lithium toxicity requires a multidisciplinary approach that integrates both medical and psychiatric care [14]. Emergency physicians, toxicologists, and psychiatric consultants must work together to ensure that both the acute toxicological aspects and the long-term mental health needs of the patient are addressed comprehensively [15]. This case underscores the importance of a coordinated approach, where psychiatric care plays a critical role not only in addressing the immediate overdose crisis but also in providing ongoing support to reduce the risk of future suicide attempts [16]. Moreover, educating patients on the risks of lithium toxicity, the importance of adhering to prescribed doses, and the need for regular follow-up is essential in preventing recurrence and ensuring better long-term outcomes [17].

Conclusion

Lithium poisoning remains a significant challenge in clinical practice due to its broad systemic effects and narrow therapeutic window. Early recognition, continuous monitoring, and a multidisciplinary approach are essential to improving outcomes in patients with lithium toxicity. Furthermore, psychiatric consultation plays a critical role in addressing the underlying mental health issues that contribute to intentional overdoses, helping to reduce the risk of recurrence and improve adherence to treatment. By integrating medical and psychiatric care, clinicians can provide comprehensive support that addresses both the immediate crisis and the long-term well-being of patients with mood disorders.

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