



Lithium Toxicity Causing Neuroleptic Malignant Syndrome

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Abstract

Lithium is used as a mood stabiliser. Here we report a case of bipolar disorder on Lithium and Olanzapine presented with fever, generalised rigidity and unconsciousness. He was diagnosed as Neuroleptic malignant syndrome (NMS). His serum lithium level was elevated. Lithium associated NMS usually occurs only in combination with antipsychotics at around 0.01-3%.

Introduction

Neuroleptic malignant syndrome (NMS) is a life-threatening neurologic emergency associated with the use of antipsychotic (neuroleptic) agents and characterized by a distinctive clinical syndrome of mental status change, rigidity, fever, and dysautonomia. Incidence rates for NMS range from 0.02 to 3 percent among patients taking antipsychotic agents. NMS is mostly found associated with the use of traditional antipsychotics, but may also occur when atypical antipsychotics such as risperidone, olanzapine, and clozapine are used¹.

There are some cases of NMS associated with the use of non-neuroleptic drugs, like carbamazepine and metoclopramide, or drugs without known anti-dopaminergic activity, such as lithium. Lithium is a first-line mood stabilizer used in the treatment and prophylaxis of bipolar disorder. There are several case reports of lithium-associated NMS, but only in combination with antipsychotics².

Case Report

A 54 year male presented to casualty in unconscious state with history of fever for past four days after which he developed generalised rigidity and altered sensorium. No other positive history. He was an old case of bipolar disorder and was on lithium and olanzapine for past 20 years. On examination his GCS was 5/15 with a raised heart rate of 120/min, blood pressure of 160/100 mm Hg and a temperature of 104⁰F and oxygen saturation of 85%. Systemic examination showed bibasal coarse crepitations and a rigid tone of all four limbs. Blood investigations showed elevated total count and renal profile and elevated creatine kinase. Chest x-ray showed features of aspiration pneumonia. Neuroimaging showed no abnormality. He was diagnosed as Neuroleptic Malignant Syndrome and aspiration Pneumonia. Due to poor GCS he was intubated and mechanically ventilated. The reason for his NMS was evaluated and his serum Lithium level was elevated at 4.3meq/L. Lithium was discontinued. He was treated with intravenous antibiotics,

supportive care and hemodialysis. Patient sensorium improved after dialysis and he was extubated on the second day. He was discharged with valproate after psychiatry consultation. At the time of discharge his serum lithium came to normal at 1.08meq/l.

Discussion

Lithium is a alkali used in bipolar disorder as mood stabiliser mainly for mania. It has a narrow therapeutic range of 0.95 – 1.5 mEq/L³. It causes depletion of phosphatidylinol bisphosphate and impairs the ability of neuron to respond to a neurotransmitter³. Though lithium is used as an mood stabiliser not all patients develop NMS. NMS with Lithium therapy has mostly been noted in patients who are on antipsychotic therapy. Isolated lithium associated NMS is very rare. Certain conditions are required for a patient on lithium therapy to develop NMS such as acute infection, vomiting, dehydration, reduced renal clearance³. Toxicity symptoms varies from mild diarrhea, vomiting, fatigue, tachycardia, hyperthermia, tremor, uncontrollable movements, muscle weakness, drowsiness to coma, seizure, acute kidney injury¹. For treatment of toxicity commonly used agents are benzodiazepines, dantrolene, bromocriptine, amantadine. These drugs are more likely to be used in severe cases and if the patient worsens¹.

Conclusion

Care has to be taken in patients with lithium therapy regarding NMS and serum lithium level has to be assessed regularly.

References

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