

Lithium Overdose with Electrocardiogram Changes Suggesting Ischemia

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ABSTRACT

Background: Lithium toxicity is associated with electrocardiogram (ECG) changes, but changes suggestive of an ST segment elevation myocardial infarction have not been reported.

Case Report: A 46-year-old incarcerated man suffering from diabetes, hypertension, and schizoaffective/bipolar disorder was treated with lithium 1,200 mg twice daily. Two days prior to presentation the patient became confused, ataxic, and anorexic in jail. Lithium level was 4.69 mmol/L. He was transferred to the emergency department. On arrival, vital signs were normal. The ECG showed a normal sinus rhythm. ST segments were elevated in the anterior leads with downward concavity. T waves were biphasic. Since these changes suggested cardiac ischemia and the patient was unable to respond to questions about chest pain, cardiac enzymes and an emergent echocardiogram were done. Troponin I was less than 0.1 µg/L. Echocardiogram was normal, without wall motion abnormalities. Treatment was with hemodialysis and whole-bowel irrigation. Postdialysis lithium level was 1.30 mmol/L. Over the next several days, electrocardiogram normalized. His speech gradually became coherent. After a 1-week hospitalization, he returned to jail.

Conclusion: Lithium intoxication can cause transient ST segment elevations suggesting an acute myocardial infarction. In the absence of a clear history, echocardiogram and cardiac enzymes can be used to rule out a myocardial infarction.

INTRODUCTION

Lithium overdoses are associated with variable electrocardiographic changes including QT prolongation, ST segment changes, and T wave changes [1–3]. Cardiac arrhythmias of junctional bradycardia, sinus node dysfunction, ventricular systolic, and asystole have been reported [4–6]. Rarely, myocardial infarction has been reported [7]. We report an unusual case of transient ST segment elevations suggesting an acute myocardial infarction in a patient with a chronic lithium overdose and altered mental status on presentation.

CASE REPORT

A 46-year-old incarcerated man suffering from diabetes, hypertension, and schizoaffective/bipolar disorder was treated with

lithium 1,200 mg twice daily. Other medications administered to him were glipizide, metformin, haloperidol, aspirin, quetiapine, benztropine, losartan, haloperidol, and pantoprazole. Two days prior to presentation the patient became confused, ataxic, and anorexic in jail. His lithium level was 4.69 mmol/L. He was transferred to the emergency department (ED). On arrival, his vital signs were normal. He was awake but confused, with jerking movements of the extremities. His speech was incoherent. Laboratory profile revealed BUN of 25 with an otherwise normal basic metabolic panel, WBC count of 14,000/mm³ without bands, and lithium level of 4.61 mmol/L. Electrocardiogram (ECG) showed a normal sinus rhythm. ST segments were elevated in the anterior leads with downward concavity. T waves were biphasic. More specifically, V1 with 1 mm of ST segment elevation, V2 with 2 mm of ST segment elevation, and V3 with 1.5 mm of ST segment elevation (*Figure 1*). These changes were not

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