Severe Lamotrigine Neurotoxicity Treated with Intralipid Emulsion Therapy

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Severe Lamotrigine Treated with Intralipid Emulsion Therapy

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Background: Intralipid emulsion (ILE) can be beneficial for cardiotoxicity related to highly lipophilic drugs. [1, 2] Lamotrigine (LTG) is lipophilic; according to the Merck Manual, the solubility of LTG at 25° C is 0.17 mg/ml. Intralipid can be a useful therapy for severe lamotrigine toxicity.

Case Report: A 23 year-old male ingested up to 13 grams of LTG and 18 grams of fluridaprone after arguing with his girlfriend. Forty minutes after ingestion, the patient was found slathering and foaming at the mouth. He was successfully aspirated but ran a tracheostomy and mechanical ventilation. The patient’s medical history included bipolar disorder, PTSD, recurrent suicide attempts, postural orthostatic tachycardia syndrome, Ehlers-Danlos syndrome, and remote plantar fasciitis surgery. He was also on LTG, Qsymia, varenicline, and metoclopramide.

On HD 1, the patient developed a 4 mm ST elevations in lead aVR and an S-wave in leads I and aVL (see figure 2). The patient became a Riker 2 and desaturated to the mid 80’s which improved with a dose of ramipril. Three hours after ILE therapy, the patient required mechanical ventilation due to respiratory failure and a profound QTc change. On HD 2, the patient developed a 6 mm ST elevation in lead aVR and a 7 mm ST elevation in lead V2, with a QRS duration of 463 ms. A dose of ILE was administered. On HD 3, the patient was rushed to the ER for recurrent suicide attempts, postural orthostatic tachycardia, hypertension, hyperreflexia, clonus, prolonged QRS and elevated CK.

On HD 4, the patient began to raise his name and to follow commands. He was anxious but did well with sedation and hyperventilation to converse but remained disoriented to place and time. He had a gut dysfunction. Antibiotics were reserved to maxillocclusion as cultures were negative. All sedatives were stopped. On HD 7 he was transferred to a psychiatric facility.

Fig. 2 – Figure 2: QRS duration before and after ILE administration. The patient was transferred to a psychiatric facility after 10 days of hospitalization. The QTc which was mildly prolonged at 463 ms decreased as well.

Discussion: This patient’s hospital course supports the mechanism of LTG as an inhibitor of voltage-sensitive sodium channels. LTG is highly lipophilic and was associated with hypertension and hypotension.

References:


Figures:

- Figure 1: A 23 year old male ingesting 13 grams of lamotrigine. This is the highest LTG level reported in the literature. Not only is this the highest LTG level with survival in the absence of hypothermia, this is also the highest LTG level documented with an ILE treatment. The patient was transferred to the ER due to life threatening symptoms. His mother described him as thrashing and tremoring. The patient’s medical history includes bipolar disorder with recurrent suicide attempts, postural orthostatic tachycardia syndrome, Ehlers-Danlos syndrome, and remote plantar fasciitis surgery. He was also on LTG, Qsymia, varenicline, and metoclopramide.

- Figure 2: QRS duration before and after ILE administration. The patient was transferred to a psychiatric facility after 10 days of hospitalization. The QTc which was mildly prolonged at 463 ms decreased as well.