

Kaplan USMLE Step 3 prep: Patient has tonic-clonic seizure

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If you're preparing for the United States Medical Licensing Examination® (USMLE®) Step 3 exam, you might want to know which questions are most often missed by test-prep takers. Check out this example from Kaplan Medical, and read an expert explanation of the answer. Also check out all posts in this series.

This month's stumper

A 37-year-old woman with history of bipolar disorder is brought to the emergency department in an obtunded state. The patient has been maintained on a stable dose of lithium carbonate, 600 mg by mouth, twice a day for the last five years. On examination she has a tonic-clonic seizure lasting approximately 30 seconds. As part of the laboratory workup, the patient's lithium level is found to be 4.2 mEq/L.

After basic airway and cardiovascular support, which of the following is the most appropriate next step in management?

- A. Loading dose of phenytoin.
- B. Renal consult for emergent dialysis.
- C. MRI of the patient's head.
- D. Conservative management, including fluid and electrolyte replacement.
- E. Liver function tests.

The correct answer is B.

Kaplan Medical explains why

The patient presents to the emergency department with potentially life-threatening lithium toxicity. Hemodialysis is the treatment of choice for lithium level greater than 4.0 mEq/L or a manifestation of symptoms of lithium toxicity such as mental status changes and seizures.

Why the other answers are wrong

Choice A: Loading dose of phenytoin is not indicated after one generalized seizure, when metabolic encephalopathy can be treated with dialysis.

Choice C: Head MRI may be an acceptable follow-up study after the patient receives dialysis, especially if the seizures continue after dialysis treatment.

Choice D: For lower levels of lithium toxicity, fluid and electrolyte replacement may be sufficient treatment.

Choice E: Hepatic toxicity, as demonstrated by liver function tests, is not suggested by the patient's presentation in the presence of lithium level greater than 4.0 mEq/L, given lithium's exclusively renal metabolism.

Tips to remember

Indications for hemodialysis in patients with lithium toxicity:

- Serum-lithium level is greater than 4.0 mEq/L.
- Signs of lithium toxicity, such as seizures and mental status changes, regardless of serum-lithium level.

For more prep questions on USMLE Steps 1, 2 and 3, view other posts in this series.

The AMA and Kaplan have teamed up to support you in reaching your goal of passing the USMLE® or COMLEX-USA®. If you're looking for additional resources, Kaplan provides free access to tools for pre-clinical studies, including Kaplan's Lecture Notes series, Integrated Vignettes, Shelf Prep and more.