

# Valproate Acid (Depakote) Induced Hyperammonemic Encephalopathy in the Pediatric Populations

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## Abstract

Valproate acid (Depakote) (VPA) is very effective in the treatment of various illnesses including: seizure disorders, migraine headache prophylaxis, neuralgia, and bipolar disorder. The use of VPA frequently results in elevated plasma levels of ammonia. This is seen despite normal baseline liver function test results in such patients.

In this case report, we describe two instances of VPA-induced hyperammonemic encephalopathy in pediatric populations.

one month before this admission, her VPA was increased from 1,000 mg to 1,500 mg and her PCP was not aware of this increase. Physical exam is unremarkable while she is in ER, except her speech was slurred and her responses were sluggish. Topiramate and Depakote were given within the normal dosing and both under regular formulation. Diagnosis during admission is bipolar disorder. No EEG was ordered by ER physician. In the ER comprehensive metabolic panel and hepatic panel were within normal limits. Both level of VPA and Ammonia were performed by high-performance liquid chromatography method (HPLC) with ultraviolet-visible (UV-Vis). Her VPA level was 120 mcg/mL (normal is 50 to 100), and her ammonia level was 186 mcg/L (normal is 10 to 47). Emergency physician decided to keep her couple days for monitoring her VPA and Ammonia level, VPA was discontinued, and the next day her VPA level was 110 mcg/mL, and her ammonia level was 82 mcg/L. And the next day, her VPA level normalized to 36 mcg/mol and her ammonia normalized to 42 mcg/mol, and her mental status improved. And the next day after, her mental status totally improved. In-house psychiatrist decided to discharge her, and VPA was discontinued and replaced with Gabapentin and Topiramate and followed up as outpatient at her PCP office.

## Summary

### Clinical findings

Patients with VHE present with varying degrees of cognitive and behavioral dysfunction. With respect to drug-drug interactions, other

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