UCLA Health

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Abstract Form

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Project Title:	A Rare Presentation of Non-Cirrhotic Hyperammonemic Encephalopathy in a Patient with Metastatic Gastrointestinal Stromal Tumor

Research Category (please check one):

☐	**Original Research**	☒	**Clinical Vignette**	☐	**Quality Improvement**	☐	**Medical Education Innovation**

Abstract

Introduction: Acute toxic encephalopathy (ATE) is a well-recognized medical emergency encountered in patients with a wide range of medical conditions. One of the common causes of ATE is hyperammonemia, which is a well-known complication of late-stage cirrhosis; however, hyperammonemia can rarely be encountered in the absence of cirrhosis and even in patients without any pre-existing hepatic disease. If untreated, hyperammonemia can be life-threatening, resulting in encephalopathy, cerebral edema, brain herniation, coma, and death. Our case describes a patient presenting with non-cirrhotic hyperammonemic encephalopathy from metastatic gastrointestinal stromal tumor (GIST).

Case Presentation: A 61-year-old Hispanic male with a past oncologic history of metastatic, high-risk GIST with significant mesenteric and peritoneal tumor burden, liver lesions, and small bowel masses who was started on treatment with imatinib 400 mg daily but was later increased to 800 mg daily. He had progressive disease and was transitioned to sunitinib 50 mg daily and was later dose reduced to 37.5 mg within a month of initiation due to grade 3 fatigue. After six months of treatment with sunitinib, he presented with 1 week of confusion, generalized weakness, and somnolence.

On presentation, vital signs showed a chronically elevated blood pressure of 160s/100s. Physical exam was significant for lack of orientation. Neurologic exam was notable for asterixis. The remainder of the exam did not demonstrate stigmata of chronic liver disease. Laboratory data on admission was notable for elevated levels of serum ammonia at 154 µmol/L. Other infectious and metabolic workups were negative. CT head without contrast did not show acute hemorrhage or midline shift or edema. Subsequent MRI brain with and without contrast revealed pre-contrast subtle T1 hyperintensity in the bilateral basal ganglia, but otherwise chronic microvascular ischemic changes and old infarcts in the left para-midline pons belly and in the right thalamus. As the only identifiable cause of acute encephalopathy was hyperammonemia, the patient was started on an aggressive bowel regimen with lactulose with a goal of 5-6 daily bowel movements (BMs). His mental status returned to baseline within one day of the treatment, with the post-treatment ammonia level of 96 µmol/L. He was discharged on home lactulose with a target of 3-4 daily BMs and re-challenged with sunitinib 37.5 mg at the time of discharge. On six-month follow-up, he continued to maintain regular BMs without further signs and symptoms of encephalopathy.

Discussion: There are several notable factors that led to the development of non-cirrhotic hyperammonemic encephalopathy in this patient. Most importantly, he had significant malignant infiltration of the liver and associated tumor burden. Second, sunitinib, a tyrosine-kinase inhibitor (TKI) and the main targeted systemic therapy agent for our patient, may have contributed to making the patient susceptible to hyperammonemic toxicity. Third, having multiple prior cerebral infarcts likely have rendered him more prone to encephalopathy from subclinical insults. This case report highlights that patients presenting with hyperammonemic encephalopathy may rarely do so in the absence of chronic liver disease. Special attention should be paid in patients with a narrow spectrum of tumor types (e.g. GIST, myeloma, neuroendocrine tumors, hepatocellular carcinoma, renal cell carcinoma, and colorectal carcinoma) and patients receiving TKIs.