



## CASE REPORT

# A Case of Wernicke's Encephalopathy in a Post-Bariatric Surgery Patient in a Community Emergency Department

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## Abstract

A 22-year-old woman with a history of idiopathic intracranial hypertension who presented to our emergency department with acute onset strabismus and bilateral sixth nerve palsy in the setting of recent sleeve gastrectomy and vomiting. Further testing revealed multiple vitamin deficiencies, including thiamine, leading to a diagnosis of Wernicke's encephalopathy. Her symptoms resolved after vitamin and nutritional repletion. Incidence of similar presentations is increasing in the setting of rising obesity and increasing usage of minimally invasive surgical techniques for treatment and management of its complications. Emergency physicians must be aware of this occult diagnosis, especially in post-bariatric surgery patients complaining of vomiting.

## Introduction

A 22-year-old woman with a past medical history significant for idiopathic intracranial hypertension (IIH), morbid obesity status post-gastric sleeve procedure one month ago, presented to the emergency department with complaints of her, "eyes crossing." Patient notes recent history of gastric sleeve procedure, complicated by significant vomiting that was managed with Zofran. She also notes a history of idiopathic intracranial hypertension, for which she takes no medications, and states her last lumbar puncture was at age 17. Her eye complaints began approximately 1 week prior to presentation to our department. She presented at an outside hospital and was admitted for an MRI. Her MRI there was unremarkable. She was discharged on day 5 of her hospital course without improvement and was

instructed to follow up with ophthalmology. Patient was immediately taken by her mother to an optometrist who recommended she present to our ED.

## Case Presentation

On presentation, she is in mild distress, but denies headache, nausea, vomiting, difficulty speaking, upper extremity weakness, or urinary incontinence. Mother at bedside denies facial droop or changes in mentation. Physical examination revealed a temperature of 36.7 °C (98.1 °F), blood pressure 167/129 mmHg, heart rate 145 beats/min, respirations 20 breaths/min, and oxygen saturation 98% on room air. Head was normocephalic and atraumatic. The left eye was esotropic with decreased visual acuity in each eye, 20/250 bilaterally. Extraocular motor exam performed and notable for bilateral sixth nerve palsy. No nystagmus was appreciated. Pupils were equal, round, and reactive to light. Cardiac exam revealed a markedly tachycardic rate and regular rhythm without murmurs, gallops, or rubs. The lungs were clear, with equal bilateral breath sounds. Abdomen was obese but was otherwise soft and non-tender. There was no appreciable organomegaly. Extremities were without edema, cyanosis, or clubbing. Skin was free of rashes or lesions. She had normal sensation throughout the upper and lower extremities. Strength 5/5 in the distal upper and lower extremities. She had bilateral, symmetric patellar hyporeflexia. There was no pronator drift. She had no difficulty with finger to nose bilaterally. Her gait was noted to be

ataxic, with primarily truncal ataxia, and the mental status exam was normal.

Our patient was given a fluid bolus of 1 Liter of Lactated Ringers for her tachycardia. She was quite anxious, and 0.5 milligrams of lorazepam was given. Labs revealed normal blood counts and differentials, mild hypoalbuminemia, mildly elevated AST, and a negative serum pregnancy test. CT imaging was deferred due to no new focal changes since hospital discharge and recent MRI. Unfortunately, MRI services were not available during the evening and neurology was immediately consulted. Concerned for complications of IICH, they recommended lumbar puncture with large volume tap in addition to consultation with ophthalmology which was obtained. The LP was unsuccessful due to the patient's habitus. It was then recommended to speak with neuro-ophthalmology, a specialty not present in our system. Arrangements were made to transfer her to a local tertiary care hospital. Prior to transfer, her heart rate and blood pressure normalized. Follow up of records from the tertiary hospital revealed that she had bilateral thalamic hyperintensities on MRI, concerning for WE. She was found to have multiple vitamin deficiencies which were repleted with improvement in her symptoms. She was discharged home on vitamin supplementation with GI, neurology, and nutrition follow up.

## Discussion

Significant obesity in the 21<sup>st</sup> century has led to increasing use of bariatric surgery as an effective means to treat and manage the disease and its complications. With the advent of laparoscopy and minimally invasive techniques, laparoscopic sleeve gastrectomy and laparoscopic Roux-en-Y are the most common bariatric interventions performed. Wernicke's encephalopathy is characterized by altered mental status, ataxia, and eye movement disorders. The full triad is only seen in about 16% of patients. Wernicke's encephalopathy is a progressive neuropsychiatric disorder that is characterized by reduced thiamine levels. It was typically associated with heavy alcohol users and patients that were severely malnourished. If left untreated, it can progress to Korsakoff syndrome which is typified by retrograde amnesia and confabulations. Wernicke's encephalopathy generally presents about 4-12 weeks post-bariatric surgery. A 2008 meta-analysis in the *Annals of Surgery* notes the increase in bariatric surgery in the United States and a subsequent increased incidence in nutritional complications. In this study, the most significant risk factor for WE in a post-bariatric patient is vomiting. MRI findings characteristic of WE were only present in 47% of patients. This was again demonstrated in a 2018 meta-analysis by *Obesity Surgery*, where they found that the incidence of post-bariatric WE is increasing. The most common presentation of these patients was, again, vomiting (87%

of patients). This further demonstrates that vomiting in post-bariatric surgery patients is the greatest risk factor for developing WE. In their meta-analysis, they found that ataxia was typically the most profound complaint followed by altered mental status and eye movement disorders. They found the full triad to be present in approximately 54% of their patients studied compared with 16% described in other studies. Altered mental status was typically only seen in older bariatric patients and eye movement disorders were more frequently seen in bariatric patients with lower BMIs. Positive imaging findings on MRI were more associated with ataxia and altered mental status, less so with eye movement disorders. 49% of patients in the 2008 meta-analysis had incomplete neurologic recovery, with memory and gait issues being cited as the most frequent complications. Other rare complications of thiamine deficiency include wet and dry beriberi, with the former characterized by high output cardiac failure and the latter characterized by peripheral neuropathy and myopathy [1-8].

## Closing Thoughts

This case represents a rare presentation of Wernicke's encephalopathy in our community emergency department. Given the rise in obesity and, subsequently, the number of bariatric surgeries, WE must be in the differential of a patient status post gastric bypass presenting with vomiting and neurologic complaints. In addition, there is increasing food insecurity in the United States, leading to increased risk for nutritional deficiencies from poor diet alone. As emergency physicians on the frontlines of healthcare, we must become increasingly aware of these presentations, their diagnosis, and their management. Failure to diagnose could lead to significant long-term neurological sequelae.

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## Conflicts of Interest

The authors of this case report have no conflicts of interest to declare.

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