

A CHALLENGING CASE: WERNICKE ENCEPAHALOPATHY AFTER GASTRIC SLEEVE SURGERY

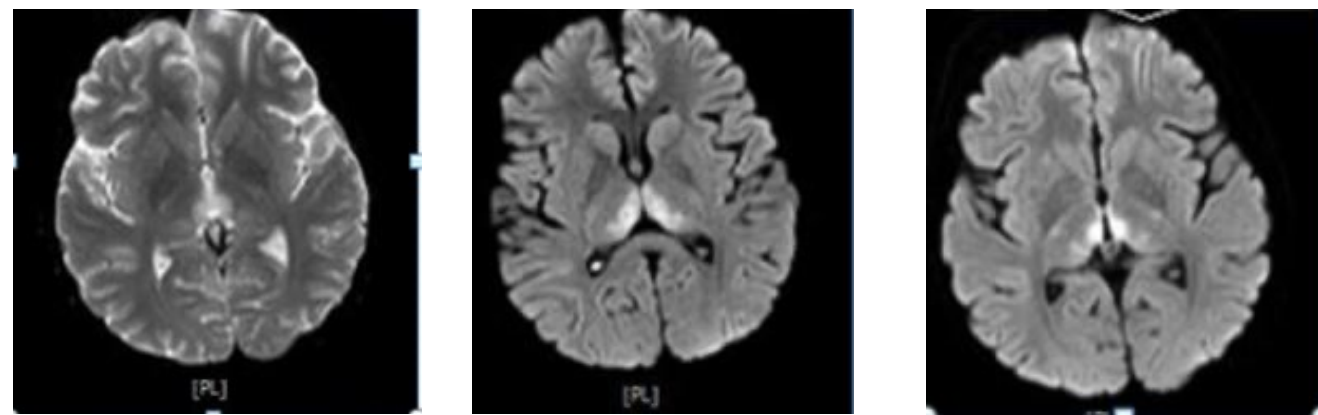
İsmail Hakkı Akbeyaz¹, Burcu Karakayalı¹, Sermin Özcan¹, Gülten Öztürk¹, Fethi Gül², Burçin Doruk Oktay², Volkan Dericioğlu³, Pınar Koytak⁴, Özge Yapıcı⁵, Eda Almus⁵, N. Evrim Saygı⁶, Olcay Ünver¹, Dilşad Türkdogan¹

¹Marmara University Department of Pediatric Neurology, ²Marmara University Department of Intensive Care, ³Marmara University Department of Ophtalmology, ⁴Marmara University Department of Neurology, ⁵Marmara University Department of Radiology, ⁶Marmara University Department of Physical Medicine and Rehabilitation

INTRODUCTION

Wernicke encephalopathy (WE) is a rare and often underdiagnosed complication of bariatric surgery. Approximately 1% of all weight loss surgery is performed in adolescents. The benefits are significant postsurgical weight loss, improvement in quality of life, and reduction in comorbidities. Reports of postoperative complications in adolescents are few because of the small number of cases. Wernicke encephalopathy, a triad of **ophthalmoplegia, ataxia, and altered mental status** is a severe consequence of thiamine (vitamin B1) deficiency. Few cases of Wernicke encephalopathy after weight loss surgery have been reported in the pediatric population. Here we describe a 17-year-old girl who developed vomiting after gastric bypass and presented with visual loss, lower extremity weakness, and slowly developing encephalopathy. Because of the atypical clinical presentation of this rare case, we would like to present and discuss our case.

MRI IMAGES



Brain MRI on day 10 shows, bilateral medial thalamic, periaqueductal areal and posterior medullary diffusion restriction and T2 hyperintensity

HIGHLIGHTS

- Initial presentation
 - Visual loss, prominent optic disc swelling, not obvious opthalmoparesis
- MRI findings
 - Normal initially, mamillary body intact
- Normal serum lactate levels
- Normal serum thiamine level (after treatment)

CASE

A 17-year-old girl presented to the emergency department with complaints of blurred vision and lower extremity weakness. Also, she had a history of vomiting three to five times a day for two weeks. Ten days ago, she had undergone a cholecystectomy with frequent vomiting and multiple gallstone detection. The operation was successful, and she was discharged from the hospital two days after surgery, but vomiting was not diminished.

She was anxious, fully alert, oriented, and followed all other commands. The patient could not stand or walk independently due to weakness and dysmetria. It was found that the **muscle strength of both legs was level 3/5. Dysmetria was observed in both hands and feet.**

On ophthalmologic examination, **bilateral grade 3 optic disc edema was noted, and vision was finger counting level.** There was neither ophthalmoparesis, nor nystagmus noted.

Complete blood count, biochemical analysis, lactate and ammonium levels were within normal limits. Contrast-enhanced brain and spinal MRIs were unremarkable. As initial diagnosis was demyelinating diseases, pulse methylprednisolone treatment (1 gr/daily) started, but clinical course worsened and she became encephalopathic (Glasgow Coma Scale: 12) at the third day of treatment. She was admitted to the intensive care unit (ICU) with her altered mental status with respiratory distress. During the follow-up, she was intubated. On the third day of ICU and seventh day of admission new MRI revealed, **diffusion restriction and T2/FLAIR bilateral thalamic hyperintensity, and EMG showed acute symmetric mixed polyneuropathy.** The patient's mom (new companion) stated that she had had sleeve gastrectomy surgery three months previously. The diagnosis was WE; immediately, intravenous thiamine 1500 mg/day was started. After the second day of treatment, consciousness and vision improved dramatically, and recovered entirely on day 5. Thiamine therapy was tapered to the maintenance dose with other B vitamins on the fifth day (100 thiamine mg daily).

As a consequence of extubation trials were unsuccessful, tracheostomy was performed. On the fifth month of treatment, the tracheostomy cannula was removed, and she could sit independently in third month. With the rehabilitation program; now it is the first year after the insult; she is walking with walker device and doing her daily routines independently.

•Due to her clinical course, we started intravenous thiamine treatment immediately before blood collection, so we could not obtain serum to prove low serum thiamine levels.

•**Vitamin B1 (blood): 130 µg/L (25-75) (after second dose of IV thiamine)**

•Vitamine B12 (blood): 580 ng/L (150-700)

•Vitamine D (blood): 34 µg/L (>30)

•Ferritin (blood): 245 ug/L (7-282)

•Folate (blood): 10,6 ug/L (4,8-37)

•She had been prescribed oral B complex vitamins, but because of frequent vomiting, she could not get them properly

•She hid the history of her bariatric surgery; the mother claimed that she was miserable and embarrassed because of her weight

•Her first weight was 125 kg, and her BMI was 44,3. On admission, they were 90 kgs and 31,9 respectively, she lost 35 kg in 3 months

•EMG was done on day 10, nerve conduction study shows severe motor and sensory axonally dominant mixt type polyneuropathy on lower extremities.

CONCLUSIONS

Surgical treatments for morbid obesity are called bariatric surgery (BS) and typically include bypass surgery, gastric banding, and sleeve gastrectomy. However, even though such surgical treatments are effective for body weight reduction, they may cause complications such as symptomatic anastomotic leakage, infection, esophageal motility disorder, malabsorption, or metabolic disorder.

BS, which is currently recommended for patients with BMI above **40 kg/m2** or above **35 kg/m2** when associated with obesity-related **diseases. Indications for adolescents are same.** (13 to 18 age)

Multiple studies have evaluated the safety and efficacy of MBS in younger adolescents. Current evidence suggests no significant clinical differences in outcomes between BS in younger (e.g., <16 years) versus older adolescents.

Some studies show serum analysis confirmed nutritional deficiencies for thiamine up to 23% of the patients before surgery. We don't have previous values of the patient but her excessive vomiting and unsuccessful vitamin supplementation deteriorated process.

American Academy of Pediatrics (AAP) recommends to monitor patients postoperatively for micronutrient deficiencies and consider providing iron, folate, and vitamin B12 supplementation as needed.

Cautious monitoring of vitamin levels after BS is mandatory. Furthermore, patients also benefit from systematic multivitamins and mineral supplementation in the short term.

REFERENCES

- Schmoke, N., Ogle, S., & Inge, T. (2021). Adolescent Bariatric Surgery. *Endotext [Internet]*.
- Jeong, H. J., Park, J. W., Kim, Y. J., Lee, Y. G., Jang, Y. W., & Seo, J. W. (2011). Wernicke's encephalopathy after sleeve gastrectomy for morbid obesity-a case report. *Annals of Rehabilitation Medicine*, 35(4), 583-586.
- Aasheim, E. T. (2008). Wernicke encephalopathy after bariatric surgery: a systematic review. *Annals of surgery*, 248(5), 714-720.

CONTACT

İsmail Hakkı Akbeyaz, MD, Marmara University Department of Pediatric Neurology
hakkiaakbeyaz@gmail.com