

Presentation of Wernicke encephalopathy in patient secondary to one anastomosis gastric bypass. Case report and literature review

Presentación de encefalopatía de Wernicke en paciente secundaria a bypass gástrico de una anastomosis. Reporte de caso y revisión de la literatura

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Abstract

Wernicke encephalopathy, which is caused by a thiamine deficiency, occurs in 0.8-2% of the population. Only 16% present the typical triad of this disease: nystagmus, confusion and ataxia. We present the case of a postoperative patient with a one anastomosis gastric bypass with reoperation undergoing a Roux-en-Y gastric bypass that begins with confusion and nystagmus on her third postoperative day. The diagnosis of Wernicke encephalopathy is made by imaging, and vitamin B1 is administered with total improvement of nystagmus and altered state of consciousness (lethargy, bradypsychia, bradylalia).

Keywords: Wernicke encephalopathy. Bariatric surgery. Vitamin B1 deficiency.

Resumen

La encefalopatía de Wernicke se produce por una deficiencia de tiamina se presenta en un 0.8-2% de la población. Solo el 16% de los casos presentan la tríada típica de esta enfermedad: nistagmo, confusión y ataxia. Presentamos el caso de una paciente operada de bypass gástrico de una anastomosis con reintervención convirtiendo a bypass gástrico en Y de Roux que en su tercer día de posoperatorio comienza con confusión y nistagmo. Se realiza por imagen el diagnóstico de encefalopatía de Wernicke se administra vitamina B1 con mejoría total del nistagmo y alteración del estado de consciencia (letargia, bradipsiquia, bradilalia).

Palabras clave: Encefalopatía de Wernicke. Cirugía bariátrica. Deficiencia de vitamina B1.

Introduction

Obesity is a chronic multifactorial disease involving genetic, environmental, and lifestyle aspects, which leads to an excessive accumulation of body fat¹. The World Health Organization (WHO) considers obesity as one of the rapidly growing metabolic disorders, which is similar to data reported for diabetes². In 2016, in Mexico, according to the report from the National Institute of Public Health, the

combined prevalence of overweight and abdominal obesity in adults older than 20 years was 76.6³.

The limited effectiveness of current medical therapies has led to an increase in bariatric procedures. Bariatric surgery has proven effective promoting weight loss and reducing the 10-year mortality rate in up to 23% compared to patients without obesity management⁴. Currently, the most widely performed procedures are laparoscopic sleeve gastrectomy and Roux-en-Y gastric bypass, with more than

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500 000 procedures performed each year across the world⁵. Laparoscopic one-anastomosis gastric bypass (OAGB) is an effective alternative to the management of obesity and comorbidity, with a reported surgical time in a cohort of 2410 OAGBs of 37.5 minutes and a mean length of stay of 1 day, with fewer reported complications vs other procedures, such as the Roux-en-Y gastric bypass⁶. The most common nutritional deficits in patients undergoing bariatric surgery are deficiencies in iron, vitamin B1 (thiamine), vitamin B12, calcium, vitamin D, folic acid, copper, and zinc⁷. The anatomical changes made in these procedures lead to frequent complications associated with a reduction of these nutrients, such as Wernicke's encephalopathy induced by thiamine deficiency.

This is the case of a patient who presented to the ER after undergoing OAGB surgery, with a 40-day history of oral intolerance, we reoperated, with Wernicke's encephalopathy during her hospitalization and in-hospital management.

Case report

A 42-year-old woman with a 10-year history of systemic arterial hypertension under control and morbid obesity with a body mass index of 47.5 (height, 159 cm; weight, 120 kg). Surgical history of adjustable gastric banding via supraumbilical laparotomy 8 years prior to her current condition, complicated 2 years later with a gastric perforation treated with laparotomy, adjustable band removal, and gastric repair. Forty days prior to being admitted to our hospital, she underwent OAGB via laparotomy, and 3 days after being put on a diet after surgery, she started vomiting, showing no improvement in her condition. After these events, she was referred to our hospital with clinical signs of severe dehydration, oral intolerance, and electrolyte abnormalities. A central venous catheter was placed, followed by electrolyte replacement and the administration of multivitamin serum, and parenteral nutrition, which improved her clinical conditions for 3 days. On day 4, we decided to operate on the patient performing an exploratory laparotomy, a Roux-en-Y gastric bypass, and a gastrostomy in the gastric remnant. Enteral diet via gastrostomy was started 48 hours later. On day 3, the patient was extubated, and bilateral nystagmus with altered consciousness became evident. Brain magnetic resonance imaging revealed the presence of characteristic structural changes of Wernicke's encephalopathy (Fig. 1). Supplementation with vitamin B1 was initiated with partial symptom improvement. The patient was discharged 10 days after surgery.

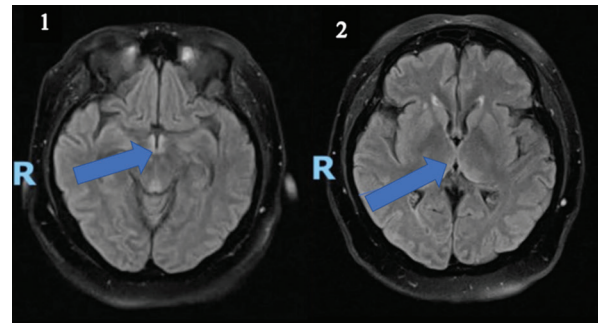


Figure 1. The arrow in image 1 indicates thalamic hyperintensity, while the arrow in image 2 indicates basal ganglia hyperintensity. Hyperintensity can be seen on T2 and FLAIR sequences, in the anterior and lateral regions to the head of the caudate nucleus, without diffusion restriction, related to changes due to microangiopathy.

Discussion

Wernicke's encephalopathy was first described by Carl Wernicke back in 1881, who reported on 3 patients with the characteristic acute onset triad⁸. Wernicke's encephalopathy is an acute neuropsychiatric syndrome characterized by nystagmus with ophthalmoplegia, altered consciousness, and ataxia, although this triad is observed in only 16% of the patients⁹. Thiamine is a water-soluble vitamin that acts as a coenzyme in the metabolism of carbohydrates, lipids, and amino acids, and plays an important role in adenosine triphosphate synthesis, maintenance of myelin layers in neurons, and neurotransmitter production^{1,9}. Thiamine is absorbed by the proximal small intestine. Previously, thiamine deficiency used to occur in alcoholic patients, but nowadays, it is a common finding after bariatric surgery and can result from a combination of factors such as decreased intake, frequent vomiting, and malabsorption^{1,7}. Most case reports and case series in the scientific medical literature currently available on bariatric surgery report that the main precipitating factor for Wernicke's encephalopathy is vomiting^{5,9}. The pathophysiology of Wernicke's encephalopathy results in increased lactate production in neurons and astrocytes, lactate accumulation, reduced pH, and focal acidosis with fragmentation in thalamic neurons, presenting apoptosis and cell death after 2 weeks of thiamine deficiency⁹.

In patients with surgical changes to their GI tract for weight loss Wernicke's encephalopathy has been reported occurs in < 1%, probably with cases being underdiagnosed¹⁰⁻¹². In 2008, in a review of 84 cases after bariatric surgery, Aasheim¹¹ described the presence of Wernicke's encephalopathy in 79 patients (94%) within the first 6 months after obesity surgery, in whom vomiting

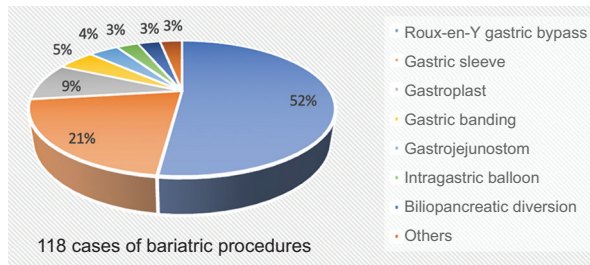


Figure 2. Presentation of Wernicke's encephalopathy in 118 cases of different types of bariatric procedures.

was the most important risk factor, present in 76 cases (90%), with a mean history of the disease of 21 days at the time of admission. In our case, upon admission, the patient had been vomiting for 40 days, probably the most important factor of Wernicke's encephalopathy in her postoperative period. In another systematic review on Wernicke's encephalopathy conducted in 2018, Oudman et al.⁵ reported 118 cases. The procedures performed in that review are shown in Fig. 2, being Roux-en-Y gastric bypass and sleeve gastrectomy the most common ones. Vomiting was the most common predisposing factor (87.3%) for the presentation of Wernicke's encephalopathy; ataxia was reported in 100 cases (84.7%); changes to the mental status, such as delirium, confusion, and cognitive problems, in 90 (76.3%); and movement impairment, such as nystagmus and ophthalmoplegia, in 87 cases (73.3%). In our patient, nystagmus and changes to the mental status were evident, without documented ataxia due to lack of ambulation. In a prospective study of 318 patients undergoing laparoscopic Roux-en-Y gastric bypass with 1-year follow-up of their vitamin B1 levels, Clements et al.¹³ reported deficiency in 18.3% of the patients, making it clear that supplementation and measurement of vitamins in all patients undergoing bariatric surgery are important because late diagnosis and management of this deficiency could lead to irreversible neurological sequelae and eventually progress into Wernicke's syndrome, which is a chronic state of Wernicke's encephalopathy.¹³ In a study of 47 patients undergoing weight loss surgery, Panchai et al.¹⁴ reported incomplete recovery in 4 patients. Therefore, early recognition of this problem is very important to initiate early management with vitamin B1 replacement and prevent long-term neurological sequelae.

Conclusions

Wernicke's encephalopathy is a neuropsychiatric disease that general and obesity surgeons should consider

in all patients undergoing bariatric surgery, whether acute or chronic, as delayed diagnosis can lead to long-term neurological complications. The early recognition of this entity is important to prevent its progression, which can lead to chronic neurological sequelae and even death.

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Conflicts of interest

None declared.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

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