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Case Report

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Acute Confusion and Double Vision Post-Bariatric Surgery

Ahmed Mohamed Mnofala*, Abdulhadi Tashkandi, Mohammad Parvez Sheikh, A Akhtar and Marwa Salman Alluqmani

Prince Mohammed Bin AbdulAziz Hospital Affair National Guard, Saudi Arabia

ABSTRACT

Background: Bariatric surgeries are one of the most commonly performed procedures for the treatment of morbidly obese people. Post-operative complications are not uncommon. These potential health risks can be both, short-term or long-term and it falls into two categories: Surgery-related or Nutritional deficiencies- related.

Case Presentation: We report 18 years old male patient with Wernicke's encephalopathy presenting as acute confusion and double visison.Pateint underwent gastric sleeve procedure two months prior. The patient's vital signs were unremarkable and he had no past history significant. Neurological exam revealed nystagmus, gaze palsy and ataxic gait. CT scan brain was unremarkable. Thiamine was administered and patient was admitted. MRI was performed which showed signs, highly suggestive of Wernicke encephalopathy likely due to Thiamine deficiency.

Conclusion: While dealing with presentation of neurological features such as memory impairment, gait abnormalities, diplopia or other neurological symptoms, in a postgastric sleeve patient, nutritional deficiency syndrome such as Wernicke's encephalopathy should be borne in mind in line with evaluating the patient for other organic causes.

***Corresponding author**

Ahmed Mohamed Mnofala, Prince Mohammed Bin AbdulAziz Hospital Affair National Guard, Saudi Arabia. Tel: +966590770474;
E-mail: dr.ahmedmnofala@gmail.com

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Introduction

Bariatric surgeries are one of the most commonly performed procedures for the treatment of morbidly obese people. They have been shown to be the most beneficial in achieving significant and long-lasting weight reduction. In spite of all the well-known benefits of these surgeries, as with almost any major surgery, post-operative complications are not uncommon. These potential health risks can be both, short-term or long-term and it falls into two categories: Surgery-related or Nutritional deficiencies-related. Emergency physicians should keep an open eye in order to prevent, recognize and treat, as early as possible, those serious post-operative complications. Below is a case of young male patient, presenting with multiple neurological signs and symptoms, following a bariatric surgery.

Clinical Case

18 years old male presented to emergency department with acute confusion and five days history of memory impairment. He also reported gait unsteadiness and double vision. Symptoms were worsening over time associated with occasional feeling of numbness of extremities. There was no history of fever, diarrhea or vomiting. He had no history of any chronic disease and denied ingestion of any substance of abuse. No history of recent travel or similar symptoms in the family.Two months ago, he underwent gastric sleeve procedure and lost 31 kgs as a result of that. Patient was not compliant to the prescribed multivitamins.

On examination vital signs were within normal limits. Patient was conscious and oriented with GCS 15/15. Neurology examination revealed; vertical nystagmus along with bilateral lateral gaze palsy (abducent nerve involvement) with no other cranial nerve affection. Power bilaterally was 5/5. Sensations and reflexes were intact bilaterally. Patient had difficulty to stand due to weakness and was noted to have ataxic gait. Rest of examination was normal Laboratory blood investigations were requested and all were reported within normal range except for positive serum ketones. CT scan of the brain also requested which was reported normal. In view of patient condition and reassessment of investigations ordered, suspicion of a metabolic cause was raised. Thiamine level was requested (knowing test result will not be available during patient stay in the emergency department). Meanwhile an empiric administration of intra venous Thiamine in the emergency department was ordered for suspicion of Wernicke Encephalopathy. Interestingly patient started to show signs of improvement, mainly in the level of confusion, double vision and nystagmus. Patient was admitted to hospital for further management. A thorough assessment by Neurologist affirmed the examination findings

documented in the Emergency department. Nystagmus, short term memory loss, ataxia and tandem gait was documented. During his inpatient hospital course, MRI was performed which showed increased signal intensity at the dorsomedial Thalami (Figures 1-3) and mild enhancement of both Mammillary bodies (figure: 4), which were highly suggestive of Wernicke encephalopathy likely due to Thiamine deficiency.

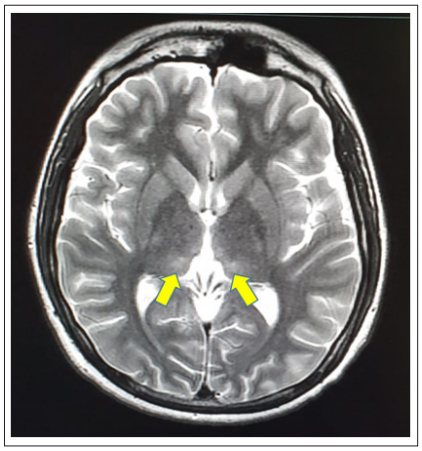

Figure 1: Brain magnetic resonance AXIAl T2 view, shows bilateral symmetrical increased signal intensity of both thalami (yellow arrows).

Figure 2: Brain magnetic resonance T2 coronal view showing bilateral symmetrical increased signal intensity of both thalami (yellow arrows.

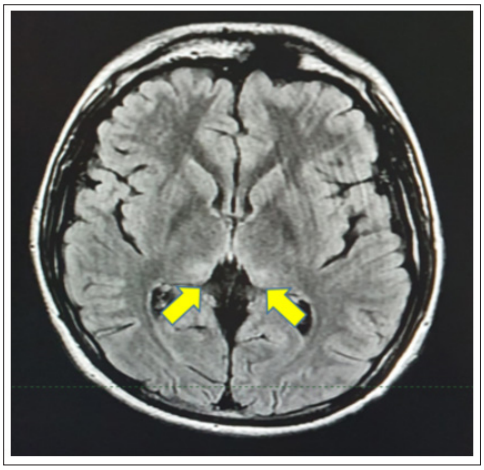

Figure 3: Brain magnetic resonance T2 Axial FlAIR view showing bilateral symmetrical increased signal intensity of both thalami (yellow arrows).

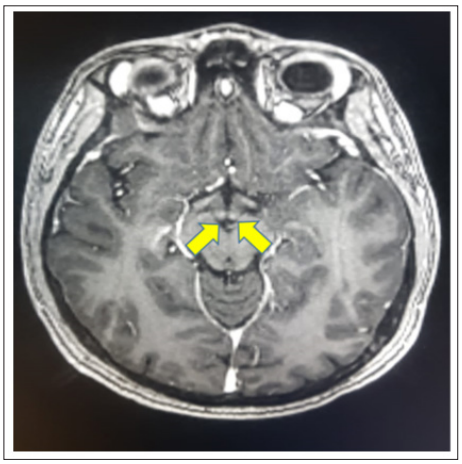

Figure 4: Brain magnetic resonance C+ view showing enhancement of bilateral mammary bodies.(yellow arrows).

The patient received Thiamine (Vitamin B1) injections 200 mg intravenously TID for 4 days and his symptom's significantly improved as a result of the treatment. A thiamine level could only be ordered 48 hrs. after the admission due to some technical issue and patient had by then received many doses of IV Thiamine and as expected it came high- greater than 203ug/l (25-85).Our patient was treated with IV thiamine and improved markedly. He was discharged home on day 6 of his admission with adequate instructions about his food intake and including multivitamin supplement.

Discussion

Half a million bariatric procedures are performed annually worldwide. Bariatric Surgery is an effective way of alleviating the adverse effects of obesity, effectively reducing the cardiovascular risk of obesity by 42% and 30% reduction of all-cause mortality [1]. It can be classified as a Restrictive procedure, a Malabsorptive procedure or both.

Nutritional deficiencies arise as a result of alterations in the structure of the gastrointestinal tract. For example in duodenal switch, food is rerouted avoiding the first part of small bowel whereas in Roux-en-Y gastric bypass there occurs a delay in mixing the food with bile and pancreatic enzymes. Surgical procedure related complications can be stenosis of the sleeve gastrectomy, anastomotic leak, bleeding or infection. On the other hand, different and various nutritional deficiencies could happen and can lead to serious but easily preventable complications.

However it is also associated with a number of nutritional disorders which result from deficiencies of micro and macro nutrients. The consequences are Anemia, various vitamin deficiencies and effects on bone metabolism. It has been observed that these deficiencies are more likely present in the obese patient prior to the procedure and thus it is very important that a proper nutritional assessment of the patient be done before going for the procedure [2].

Wernicke encephalopathy is an acute neurological condition induced by a single vitamin deficiency-Thiamine, Vitamin B1, which primarily affects the peripheral and central nervous systems. It is characterized by a clinical triad of ophthalmological findings, cerebellar dysfunction and confusion but only 16% of cases exhibit all three features at the same time [2]. The encephalopathy should be differentiated from Korsakoff syndrome, a neuropsychiatric disorder associated with confabulation and significant impairment

of the anterograde and retrograde memory. Immediate memory is maintained but short term memory is diminished.

Although Wernicke encephalopathy is mostly associated with chronic Alcoholism but it is also associated with: Severe malnutrition, Hyperemesis gravidarum, prolonged parenteral nutrition, malignancies, immunodeficiency syndromes, liver disease, hyperthyroidism, severe anorexia nervosa and with Bariatric surgeries [3-5].

Our patient had Sleeve gastrectomy. This procedure leaves the patient with nearly regular intestinal absorption. However nutritional deficiencies may still also occur due to reduced food intake, inadequate diet, vomiting or prolonged parenteral feeding. Our patient had poor oral feeding after the procedure complicated by nausea and intermittent vomiting.

Across the age profile, micronutrient deficiencies were common, with high prevalence of Vitamin D, Magnesium, and Phosphate, Iron, and Vitamin A deficiencies. High body mass index and high fasting plasma glucose increased the risk of deficiencies, particularly for Vitamin D. Thus Preoperative screening and correction of deficiencies is advised [6].

Whereas Thiamine deficiency has been discovered in up to 49% patients after Gastric bypass mostly as a result of bypass of the Jejunum where it is primarily absorbed, there are few case reports in the literature after sleeve gastrectomy [1,7]. However it can occur also from inadequate oral intake due to persistent or intermittent vomiting which was the case with our patient.

Although 94% of Wernicke Encephalopathy (WE) cases were seen within 6 months after surgery, it may appear as soon as three weeks after surgery or even long-term after 72 weeks of surgery [8,9]. WE is a medical emergency but fortunately easily reversible. Diagnosis is clinical and treatment must start just on clinical suspicion. MRI may reveal hyper intense signaling in the periventricular thalamus, mammillary bodies and periaqueductal gray matter.

Erythrocyte transketolase levels can detect Thiamine deficiency. Levels of lactate and pyruvate are often measured since Thiamine is a cofactor for pyruvate dehydrogenase enzyme.

The treatment is immediate and prompt administration of Thiamine parenterally and in adequate doses as attempts to administer orally with patient having frequent vomiting and in inadequate doses has led to worsening of the condition to Korsakoff syndrome. According to the European Federation of Neurological Societies and the Royal College of Physicians, 500 mg of parenteral thiamine should be given three times daily until symptoms of acute WE resolve. Some may require even higher doses. The treatment leads to amelioration of the symptoms gradually although some neuro-deficit will stay with the patient.

As it is established that both short and long term nutritional deficiencies follow the various bariatric procedures, it is therefore important to screen the patients for any pre-existing eating disorder or any preexisting nutritional deficiency before going ahead for the procedure. Rare deficiencies can lead to serious complications such as encephalopathy (as in our case) or protein-energy malnutrition. Long-term complications include changes in bone metabolism or neurological complications which need to be carefully monitored. Important consideration are for routine multivitamin and mineral supplementation, use of ursodeoxycholic acid for prevention of formation of GB stones in the first 6 months after procedure and regular lifelong follow up of all patients.

Conclusion

In conclusion, the case illustrated a classic example of reversible neurological manifestation of Thiamine vitamin B1 deficiency post gastric sleeve. While dealing with presentation of neurological features such as memory impairment, gait abnormalities, diplopia or other neurological symptoms, in a post gastric sleeve patient, nutritional deficiency syndrome such as Wernicke's encephalopathy should be borne in mind in line with evaluating the patient for other organic causes. Such a presentation can be non-compliance with supplements as demonstrated in this case.

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