Nutritional deficiencies and Psychiatric Symptoms in Gastric Bypass: A Case Report and Literature Review

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Background

The Roux-en-Y gastric bypass is the most common bariatric procedure done in the United States and has a major impact on gastrointestinal absorption by both restricting the amount of food entering and decreasing the length of passage through the small intestine. Patients with a history of gastric bypass have an increased risk for nutritional deficiencies which can in turn cause numerous psychiatric symptoms.

Case Report

- 41-year-old woman with a remote history of Roux-en-Y gastric bypass presents with 1 month history of worsening confusion along with unsteadiness and frequent falls.
- Due to recent nausea, vomiting, and pain secondary to a bleeding duodenal ulcer, patient has been eating minimally, up to 500 calories a day, for the last few months prior to admission.
- Per sister, patient had been disoriented at home, enacting bizarre behaviors like throwing water onto a stereo system, and displaying increasingly “manic-like” symptoms such as calling her family incessantly.
- Patient was also noted by her partner to be mismanaging her own medications and supplementations at home. On initial evaluation, patient was noted to be depressed, tearful, and paranoid with significant difficulty with short-term memory and attention. She scored a 14/30 on MOCA. Neuroimaging was unremarkable.
- Additional symptoms included dry skin, bruising along bilateral upper extremities, hair kinking and loss, mouth ulcers, and postural and intention tremor in both hands and tongue.
- Following a week of oral B vitamin replacement, thiamine infusion, and IV copper supplementation, patient’s cognition and mood had improved along with her gait instability. She was discharged home to the care of her family.

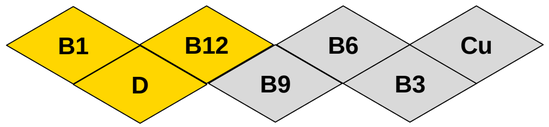
Physiological Factors	Behavioral Factors
Changes in digestion of food	Substance use (especially alcohol)
Changes in absorption of food	Maladaptive or disordered eating
Bypassing primary sites of absorption	Nausea and Vomiting
Reduced ability for food intake	Nonadherence to dietary recommendations
Reduced gastric acid secretion	Nonadherence to supplement recommendations
Reduced intrinsic factor secretion	
Pre-existing nutritional deficiencies	
Small intestine bacterial overgrowth	

Table 1. Physiological and behavioral risk factors for nutritional deficiency in patients with gastric bypass[5]

Nutrition at Risk:

Gold: common deficiency

Gray: rare deficiency



Deficient Nutrition	Neuropsychiatric findings
Thiamine (B1)	Wernicke's encephalopathy, Korsakoff syndrome
Niacin (B3)	Pellagra encephalopathy (reported in heavy alcohol use)
Pyridoxine (B6)	Psychosis (however, only reported in patients with concurrent Isonazid treatment or CBS deficiency)
Folate (B9)	Depression, attention and memory deficits
Cobalamin (B12)	Cognitive deficits, psychosis, encephalopathy , coma
Vitamin D	Depressive symptoms
Copper	Primarily neurological deficits with reports of mild cognitive impairment

Table 2. Deficient nutrition and corresponding neuropsychiatric findings[1,2,3,4]

Discussion

- Vitamin deficiencies can contribute to neuropsychiatric findings especially in vulnerable population such as those who have went through a Roux-en-Y gastric bypass procedure.
- Risk factors are multifold and include a variety of both physiologic changes due to the procedure itself as well as the patient’s subsequent behavior patterns such as substance use and adherence to diet and supplementation.[5]
- B vitamin deficiencies have a high prevalence after gastric bypass and can manifest with encephalopathic or depressive symptoms based on the severity of the deficiency.
- Thiamine (B1) and Cobalamin (B12) are the most seen B vitamin deficiencies after gastric bypass and can result in severe clinical findings such as encephalopathy and psychosis.
- Laboratory investigations including serum levels and neuroimaging are often unreliable in identifying deficiencies.[2]
- In our patient, a period of repeated nausea and vomiting secondary to duodenal ulcer, reduced food intake, and mismanagement of dietary supplementation resulted in clinical manifestations that indicate both thiamine and copper deficiency.
- Supplementation with the help of neurology and nutrition consultations were critical in treatment and recovery.

Conclusions

CL psychiatrists should be aware of the potential for nutritional deficiencies in patients with a history of gastric bypass and recognize neuropsychiatric symptoms relating to these deficiencies so that timely intervention can enacted.

References