DELAYED PRESENTATION OF SEVERE MALABSORPTION AND HYPERAMMONEMIA SECONDARY TO GASTRIC BYPASS

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INTRODUCTION

• Roux-en-Y gastric bypass procedure is a commonly performed surgical treatment for weight loss
• In a Roux-en-Y, a portion of the jejunum is anastomosed with a small portion of the stomach creating a gastric pouch. A majority of the stomach and duodenum is bypassed.
• Gastric by-pass-related hyperammonemia is a rare complication of the Roux-en-Y gastric bypass (RYGB) seen in women ages 39-60
• These women initially lose weight post-bypass.
• However, a delayed presentation of rising ammonia levels, zinc deficiency, and hypoalbuminemia is observed with no liver disease present [1].
• This condition can lead to encephalopathy and death.

CASE DESCRIPTION

• A 57-year-old woman with a past medical history of nonalcoholic steatohepatitis, chronic kidney disease, and rheumatoid arthritis had a RYGB in 2001 and lost 200 lbs.
• In 2018, she was admitted for weakness and altered mental status. Her ammonia level was severely elevated (>300 µ/dL). Rifaximin and lactulose resolved her symptoms.
• She presented again in 2021 with similar symptoms and elevated ammonia which again resolved with administration of rifaximin and lactulose.
• She was admitted in 2022 for weakness, anorexia, and lower extremity swelling.
• On admission, she was alert, oriented, and hypotensive at 110/80 mmHg.
• Laboratory testing demonstrated an elevated creatinine (1.82) and ammonia (142 µ/dL), and decreased serum albumin (1.4g/dl), Zinc (3.6 mcg/ml), and copper levels (.32 mcg/ml). Additional work-up included Anti-Nuclear Antibodies to rule out Lupus Glomerulonephritis, Perinuclear Anti-Neutrophil Cytoplasmic antibodies/Antineutrophil Cytoplasmic Antibodies to rule out vasculitis, serum and urine protein electrophoresis studies for evidence of liver disease, and Anti-Glomerular Basement Membrane antibodies for autoimmune glomerulonephritis. All results were normal.
• Abdominal CT scan showed no splenorenal shunt and liver biopsy showed no cirrhosis, hemosiderosis, or Wilson’s disease.
• She was treated with lasix, spironolactone, rifaximin/lactulose, and total parenteral nutrition with a GI specialist follow-up.

CONCLUSION

• Her presentation of kidney impairment, low zinc, low albumin, elevated ammonia, fatigue, and no liver pathology agrees with previously reported cases of post-RYGB hyperammonemia [2].
• She was discharged on lasix, spironolactone, rifaximin/lactulose, and total parenteral nutrition with a GI specialist follow-up.

DISCUSSION

• This case illustrates a rare complication of gastric bypass related hyperammonemia.
• It is important to highlight this case because of its late and non-specific presentation with a poor prognosis and high fatality. Identifying patients at risk of complications would be beneficial in early management and treatment to improve mortality [3].
• X-linked partial ornithine transcarbamylase has been implicated.
• Zinc deficiency from malabsorption is another possibility.
• Given the obesity epidemic in the United States and the increasing use of Roux-en-Y procedures it is important to understand this potential long term side effect of the procedure.
• Better prescreening and monitoring of zinc, copper, ammonia levels for 10+ years after the procedure may be warranted to catch any malabsorption and quickly reverse it.

REFERENCES


FIGURE 1


FIGURE 2

UREA CYCLE AND ASSOCIATED ENZYMES [1]