Case Study

TREATING MICRONUTRIENT DEFICIENCY AFTER ROUX-EN-Y GASTRIC BYPASS

NOTES:

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THE CASE:

A 34-year-old female patient underwent Roux-en-Y gastric bypass (RYGB) in August 2011. She had no preoperative nutrient screening, and was seen by the outpatient hospital dietitian prior to discharge after surgery. She stated that, during that time, she was given a "few pages" of education regarding diet after surgery, including instructions on taking vitamin supplement. It was suggested that she take "two children's chewable" multivitamins each day and "possibly some iron" immediately postoperative. According to the patient, there were no further instructions.

In December 2016, she scheduled a nutrition consult with Cassie I. Story, RDN. This visit was her first time seeing a dietitian after surgery, with the exception of her discharge visit by the outpatient registered dietitian. She reported having low energy, generalized weakness, and occasional forgetfulness or "brain fog." She was active on social media and reported that she had found a good support system online with fellow postoperative patients. She was interested in learning more about her specific nutrition needs, citing that she had gained about 20 pounds from her lowest weight and desired to lose that weight "plus a little more." Despite her reported low energy levels, Ms. Story observed that she was engaged in the session and seemed highly motivated to make changes. She had recently signed up for a 5k run and was starting to train, but was confused about what to eat. A review of her current micronutrient supplementation found that she was taking one children's chewable tablet about five days per week, and she started taking a sublingual B12 to help improve her energy (as someone instructed her to do online). She also bought glucosaminechondroitin for joint pain, but it remained unopened in her cabinet. Upon further interviewing, she shared that she tried iron a few months after surgery but experienced constipation and stopped taking it. She was sent for a complete lab workup from her primary care physician, who agreed to add the following nutrition-related labs: iron panel, whole blood thiamin, serum B1/Folate & MMA, 25(OH)D, serum PTH, plasma retinol, plasma alpha tocopherol, plasma zinc, ceruloplasmin.

The patient's out-of-range nutrition labs were as follows:

- whole blood thiamin 67nmol/L (normal 70-180nmol/L)
- serum B12 >2000pg/mL (normal 200–900pg/mL) (MMA high end of normal .27µmol/L)
- hemoglobin 11.2g/dL (normal 12.0–15.5g/dL)
- hematocrit 33.0% (normal 34.9-44.5%)
- iron 47µg/dL (normal 60–170µg/dL) ferritin 21µg/mL TIBC 474µg/dL (normal 240–450µg/dL)
- 25(OH)D 22ng/mL (adequate >50ng/mL)
- PTH 73pg/mL (normal 10–65pg/mL).

Lab interpretation:

- serum B12 was elevated likely due to her recent intake of supplemental sublingual B12 (she had taken it a few hours before lab draw).
- Her MMA was on high end of normal elevated MMA can indicate a vitamin B12 deficiency.
- She was deficient in thiamin, had iron deficiency anemia, and low vitamin D with secondary hyperparathyroidism.

STRATEGIES AND OUTCOMES:

During the interview that occurred prior to reviewing the lab results, the author and patient discussed appropriate micronutrient supplementation intake, including recommended levels of B1, folate, and iron. She agreed to try specialized bariatric multivitamin/mineral supplements with higher targeted nutrient levels. She also agreed to start taking calcium citrate with vitamin D in divided doses of 500mg throughout the day.

At the patient's follow-up visit in January 2017, she reported finding a specialized bariatric multivitamin supplement that she enjoyed and was taking it twice each day. She had tried a few different calcium supplements but noticed she often forgot to take them. The author reviewed her labs and discussed her identified deficiencies and physical signs and symptoms. The patient was given written material detailing her specific nutrient levels and the risks of not treating nutrient deficiencies. She was given further instruction on micronutrient supplementation based on her specific lab values, including 65mg elemental iron three times per day (TID) for 3 to 6 months until iron panel could be repeated (separated from calcium citrate). Ms. Story encouraged her to focus on finding a calcium supplement that she liked so she would be more likely to adhere to taking it. She continued on her bariatric-specific multivitamin, adding 100mg/day of vitamin B1 for 30 days.

She was active in finding personal strategies to improve her adherence. She decided to set a timer on her phone to remind her to take her supplements. She agreed to check in with her social network to find a "supplement buddy" to act as an accountability partner for her, and she also gave herself a star sticker in her calendar each day she met her supplement goals.

Ms. Story will continue to work together and monitor her nutrition levels every three months until they are within normal limits.
