Refractory Iron Deficiency Anemia

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Objectives: Anemia is a frequently observed consequence after bariatric surgery particularly involving patients who have had a malabsorptive procedure. Common causes of anemia in these patients are typically due to iron, folate or vitamin B12 deficiency. This case demonstrates the need to evaluate for less common causes of anemia in patients who have had bariatric surgery.

Methods: A 46-year-old female with a who underwent bariatric surgery in 2002 and had a biliopancreatic diversion with duodenal switch. Her preop weigh was 512 lbs and lost over 300 pounds over the following two years. However, beginning approximately 2 years after the procedure, she developed a progressive anemia. By 2009, her hemoglobin had fallen as low as 6.1 g/dL. She had a microcytic anemia, and an evaluation at that time demonstrated an iron of 14 mcg/dL and ferritin of 6 ng/mL. No other etiology for the anemia was disclosed. A GI evaluation did not demonstrate any GI blood loss. She did have an iron absorption study that demonstrated that she was unable to absorb oral iron. In 2011, she began receiving Ferrlecit 125 mg for her iron deficiency anemia every 2–3 weeks, her iron studies, and her hemoglobin normalized. Patient presented to Clinical Nutrition for consultation in 2016 and was noted to have an elevated RDW of 52.6 fL and mild macrocytosis 101.5 fL. Follow up labs revealed low serum copper 54 mcg/dL (nl 85–155 mcg/dL) and serum zinc 44 mcg/dL (nl 55–150 mcg/dL). Patient was subsequently started on a monthly multivitamin infusions with an addition of zinc 10 mg and copper 2 mg. Her requirement of Ferrlecit 125 mg every 2–3 weeks reduced to every 8 weeks.

Results: Copper deficiency can result in microcytic, normocytic or macrocytic anemia. This patient had refractory iron deficiency anemia with macrocytosis from copper deficiency related to her bariatric surgery. Copper deficiency can be exacerbated by zinc supplementation and needs to be considered when treating zinc deficiencies. After adequate co-administration of copper and zinc, the frequency of iron infusions required for the patient decreased.

Conclusions: Micronutrient deficiency is a potential cause of anemia, especially in patients who have a history of bariatric surgery. Copper deficiency can have varying clinical presentations but should be considered in the setting of refractory iron deficiency anemia.

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