VITAMIN B12 DEFICIENCY AS UNEXPECTED CAUSE OF HEMOLYTIC ANEMIA AND ATYPICAL PRESENTATION OF HEPATOCELLULAR ADENOMA

Andrew Gregory, MD; Magdalena Flejsierowicz, MD

Aurora Health Care Internal Medicine Residency Program

Introduction

Hemolytic Anemia

- Hemolytic anemia is an often life-threatening condition of accelerated red blood cell turnover
- Most hemolysis cases involve external triggers, autoimmunity, or intrinsic red blood cell defects
- However severe B12 deficiency can mimic acute hemolysis

Pernicious Anemia

- Most common cause of B12 deficiency
- Autoimmune disorder targeting Intrinsic factor and parietal cells

Hepatocellular Carcinoma

- Hepatocellular carcinoma makes up over 2/3 of liver cancers
- Expected to cause over 30,000 deaths in 2022

Hepatocellular Adenoma

- Rare, benign liver tumor (3/100,000 women)
- Estimated risk of malignant transformation ~4%
- MRI subtypes IHCA, H-HCA, b-HCA, UHCA

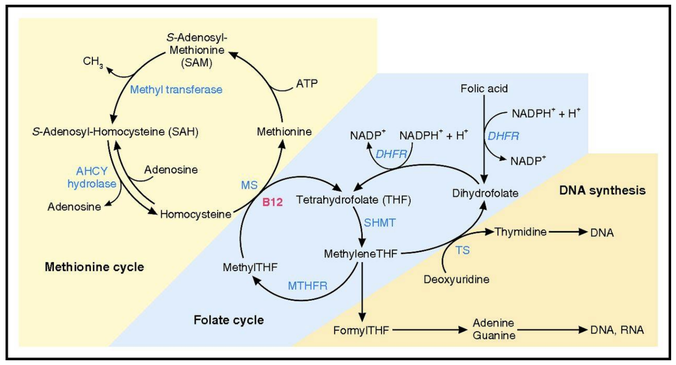

Figure 1. B12 pathway and involvement in DNA synthesis.[3]

Case Presentation

History

A 53-year-old female presented to her primary care provider with 4 weeks of progressive exertional dyspnea, lower abdominal pain and intermittent lightheadedness. She had history of psoriatic arthritis not on current treatment but was otherwise healthy.

Physical Exam

- No distress
- Mild pallor
- Tachycardic
- Abdominal fullness, with lower abdominal tenderness

Investigative Studies

Macrocytic anemia with thrombocytopenia
- Hgb 5.7 g/dL, WBC 11.2 K/µL, PLT 94 K/µL
- MCV 135
- LDH 4,233 units/L, undetectable haptoglobin, but normal bilirubin
- Iron levels adequate
- B12 84 pg/mL (211-911)

Due to concerns for intraabdominal bleeding, abdominal imaging was obtained which showed a 16 by 14 cm exophytic mass extending inferiorly off the left hepatic lobe.

Parietal cell antibody was positive with a titer of 1:80 and intrinsic factor antibody was also positive.

Outcome

While AFP was negative, biopsy of the mass was concerning for hepatocellular carcinoma. She underwent surgical resection demonstrating only hepatocellular adenoma.
The patient was supplemented with 1000 mcg B12 and her hemoglobin slowly recovered.

Discussion

B12 deficiency is a rare cause of hemolysis that should be included in a clinician's differential diagnosis as treatment is extremely effective and unique among causes of hemolytic anemia. In our patient's case, the elevation in MCV, clear hemolysis with reduced haptoglobin and high LDH but with lack of bilirubin elevation hinted toward bone marrow failure and the ultimate diagnosis of pernicious anemia.

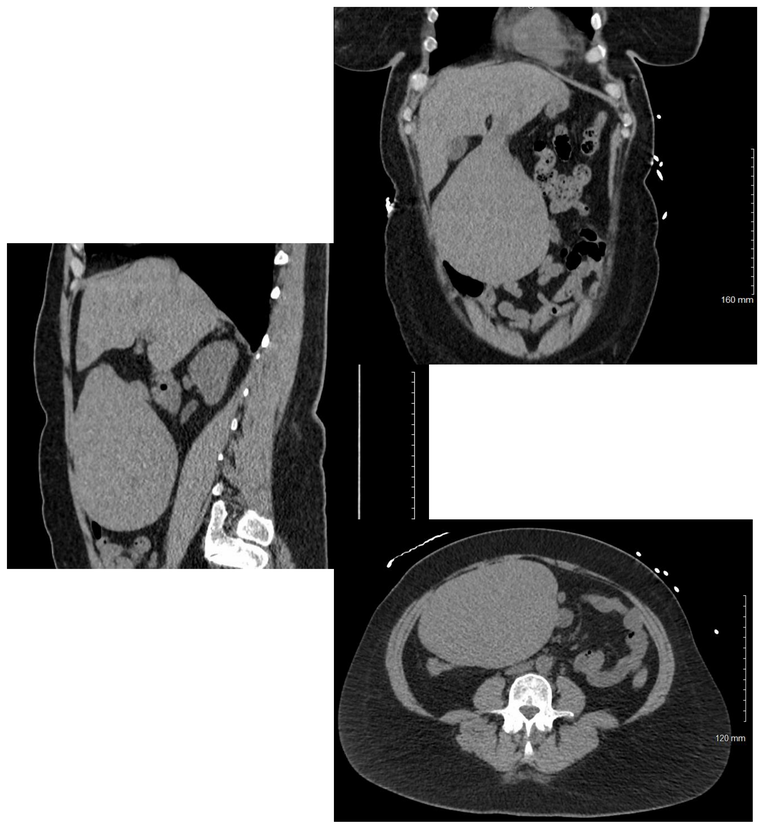

Figure 2. Exophytic Liver mass. FNA initially with concern for HCC found to be hepatocellular adenoma.

References

1. American Cancer Society. Cancer Facts & Figures 2021. Atlanta: American Cancer Society; 2021.
2. Murphy, G., et al. (2015). Cancer Risk After Pernicious Anemia in the US Elderly Population. *Clinical gastroenterology and hepatology*, *13*(13), 2282–9.e94. https://doi.org/10.1016/j.cgh.2015.05.040
3. Ralph Green; Vitamin B_{12} deficiency from the perspective of a practicing hematologist. *Blood* 2017; 129 (19): 2603–2611. doi: https://doi.org/10.1182/blood-2016-10-569186