Iron Man: A Case of Non-HFE Hemochromatosis Without Significant Fibrosis

Hunza Chaudhry[1], Aalam Sohal[1], Arpine Petrosyan[1], Gieric Laput[2], Devang Prajapati[2]

[1]Department of Internal Medicine, University of California, San Francisco- Fresno, California,

[2]Department of Gastroenterology and Hepatology, University of California, San Francisco-Fresno, California

UCSF Fresno

Introduction

- Hereditary hemochromatosis (HH) is a rare disorder with abnormally high levels of intestinal iron absorption leading to end organ damage.
- It is classically associated with HFE gene mutation although there are isolated case reports of non-HFE hemochromatosis.
- We present a case of an elderly man evaluated for elevated ferritin found to have non-HFE hemochromatosis.

Case Description

- A 74-year-old Japanese man with a medical history of colon cancer status post hemicolectomy was evaluated for ferritin above 1500 mg/dL.
- He was asymptomatic and laboratory studies revealed hemoglobin 10.2 g/dL, iron 239 mcg/dL, iron saturation >90%, transferrin 195 mg/dL and normal liver enzymes.
- Given the elevated ferritin and iron saturation, there was a concern for iron overload. Genetic testing for HFE mutation was negative.
- Secondary causes of iron overload such as thalassemia, or prior history of transfusions were ruled out.
- MRI of the abdomen revealed iron deposition with hypointense liver on T2-weighted imaging and normal appearing spleen consistent with primary hemochromatosis (Figure 1a).

Case Description (contd.)

- Given elevated ferritin, a liver biopsy was performed to assess for fibrosis which revealed coarse iron deposits corresponding to hemosiderin, without fibrosis (Figure 1b-c).
- The hepatic iron index was 4.3 and hepatic iron concentration by weight was 1770 ug/g further suggesting a diagnosis of non-HFE hemochromatosis.
- Hematology was consulted and the patient underwent phlebotomy treatments. He developed symptomatic anemia therefore phlebotomy was stopped and deferasirox was initiated.
- He remains under close monitoring. Results of further non-HFE gene testing are pending.

Images

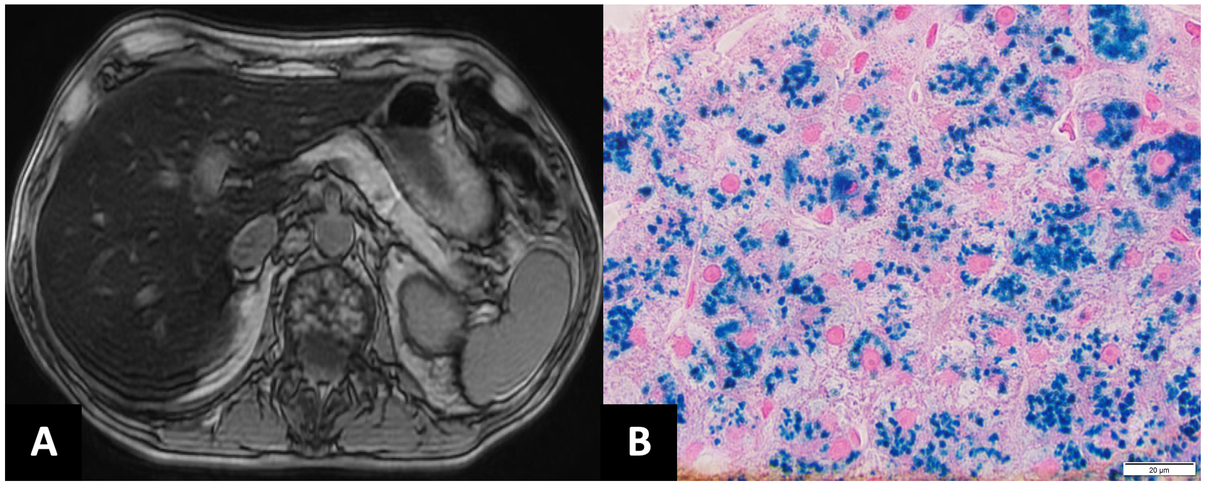

Figure 1: A. MRI of the abdomen showing iron deposition with hypointense liver on T2-weighted imaging and normal appearing spleen. **B**.Prussian blue iron stain demonstrating blue granules of hemosiderin.

Discussion

- HFE gene modulates the expression of hepcidin, an iron-regulating hormone in the liver controlling the delivery of iron into the circulation.
- Primary mutations in HFE gene are the most recognized genetic disorders however, other rare non-HFE genes such as hemojuvelin (HJV), hepcidin (HAMP), transferrin receptor (TFR2) and ferroportin (SLC40A1) can also be involved.
- The diagnosis typically involves excluding secondary causes of iron overload, assessing degree of iron stores and hepatic fibrosis.
- It is interesting to note that our patient had no fibrosis despite the long duration of disease and degree of ferritin elevation.
- This case emphasizes that elevated ferritin levels should be evaluated diligently and early recognition can lead to a prompt diagnosis and initiation of life-saving treatment.

References

- Kowdley KV, Brown KE, Ahn J, Sundaram V. ACG clinical guideline: hereditary hemochromatosis [published correction appears in Am J Gastroenterol 2019;114:1927]. Am J Gastroenterol 2019;2019:1202-1218.
- Adams PC. Epidemiology and diagnostic testing for hemochromatosis and iron overload. Int J Lab Hematol. 2015 May;37 Suppl 1:25-30.