Sickle Hepatopathy: An Uncommon Sickle Cell Crisis

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Learning Objectives

- Recognizing intrahepatic vaso-occlusive syndrome, or sickle hepatopathy, as a rare complication of sickle cell disease with life threatening complications if diagnosed late in the course

Case Presentation

- 32 M with history of sickle cell disease(Hb-SS) with previous crisis and auto-splenectomy, end stage renal disease (ESRD) on hemodialysis, and recent diagnosis of septic arthritis, presented with complaints of worsening fatigue and generalized body aches.
- Physical exam notable for scleral icterus, left knee swelling and erythema, diffuse myalgias as well as crackles in bilateral lungs.
- Initial labs significant for leukocytosis (WBC 43,000/µL), profound anemia (Hgb 3.7 g/dL) and coagulopathy INR 2.1. Liver enzymes were elevated at ALP 527 U/L, ALT 48 U/L, AST 209 U/L. Total bilirubin was 39 mg/dL with conjugated fraction 34.4 mg/dL, blood urea nitrogen (BUN) 67mg/dL, creatinine of 4.34mg/dL, and ferritin >10,000.
- Blood cultures revealed Staphylococcus aureus MSSA, likely due to left knee septic joint which was confirmed with arthrocentesis
- RUQ US showed hepatomegaly with liver that is 24 cm
- With elevated inflammatory markers, lactic acidosis and hemodynamic instability, clinical picture was concerning for sepsis secondary to MSSA bacteremia in setting of sickle cell crisis and hepatopathy

Outcomes

•Patient was admitted to ICU due to hypoxic respiratory failure secondary to fluid overload.
•Clinical course was complicated by septic shock with multi-organ dysfunction including acute liver failure due to hepatic sequestration crisis, hemochromatosis, encephalopathy and disseminated intravascular coagulation.
•Metabolic derangements led to patient requiring CRRT, which was then complicated by wide complex tachycardia requiring amiodarone drip. He also had digital necrosis secondary to pressor support.
•Patient was treated with supportive care including treatment of underlying infection, PRBC transfusions, and vitamin K administration to address coagulopathy.

Imaging

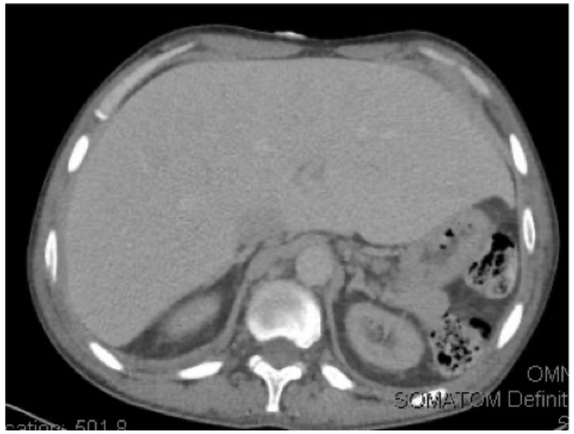

Image 1. Contrast enhanced spiral CT of the chest, abdomen and pelvis showing markedly enlarged measuring 20 cm in craniocaudal dimension with lobulated contour and non visualized spleen.

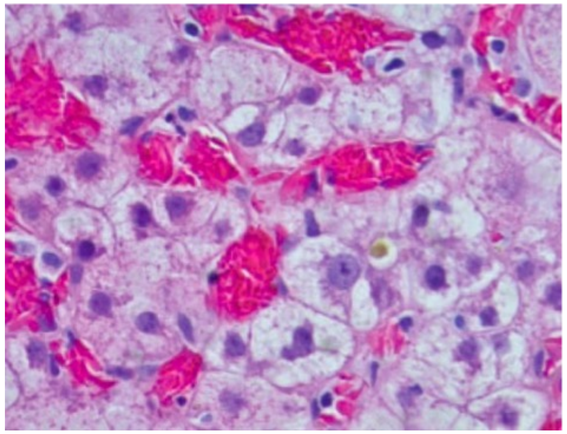

Image 2. Liver biopsy showing dilated sinusoids with aggregates of sickled red blood cells. There is also presence of canalicular cholestasis.
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Discussion

- Hepatopathy occurs in roughly 10% of homozygous sickle cell patients, can be self resolving or lead to fulminant hepatic failure
- Myriad of conditions qualify under Sickle Cell Hepatopathy: Acute Hepatic Crisis, Hepatic Sequestration, Intrahepatic cholestasis
- Sickling in the sinusoids leading to hepatocellular necrosis, engorgement of Kupffer cells and bile stasis 1
- Common presentation of all three conditions include acute RUQ pain, nausea, fever, abdominal tenderness and elevated liver enzymes
- Intrahepatic cholestasis is severe presentation of sickle cell hepatopathy with hypoxic injury leading to blockage and cholestasis
- Presentation overlaps with acute hepatic crisis with addition of hyperbilirubinemia, severe jaundice, renal impairment, and encephalopathy
- Total bilirubin is typically markedly elevated due to combination of hemolysis, cholestasis and renal dysfunction
- Sequestration can present with significant rapid onset hepatomegaly, drop in hemoglobin/hematocrit with RUQ pain, which can ultimately lead to cardiac and pulmonary instability
- Treatment is generally supportive with exchange transfusion, fresh plasma for coagulopathy correction, blood transfusion for hemolysis

Conclusions

- Sickle cell patients are prone to acute hepatopathy as a result of cells sickling in hepatic sinusoids, leading to acute hepatic crisis or intrahepatic cholestasis
- Presentation typically encompasses RUQ abdominal pain, elevated liver enzymes, malaise, and in severe cases, hemodynamic instability
- Early recognition of sickle hepatopathy can prevent life threatening complications
- Treatment consists generally of exchange transfusions and supportive care

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