UNEXPLAINED HEPATOMEGALY, PROGRESSIVE LIVER DISEASE, AND DYSLIPIDEMIA PRECEDE MULTIORGAN DAMAGE

CASE REPORT: Female pediatric patient with Lysosomal Acid Lipase Deficiency (LAL-D)

Based upon a published case report:

YEARS OF AGE

INITIAL PRESENTATION:
- Reduced weight and height
- Alternating episodes of diarrhea and constipation

IMAGING RESULTS:
- Hepatosplenomegaly confirmed on ultrasound

LABORATORY RESULTS—LIVER FUNCTION TESTS:
- ALT 344 U/L
- AST 229 U/L
- Total bilirubin 13.7 µmol/L

LABORATORY RESULTS—LIPID PANEL:
- LDL-c 7.2 mmol/L
- HDL-c 0.6 mmol/L
- Total cholesterol 8.9 mmol/L
- TGs 3.6 mmol/L

LABORATORY RESULTS—COAGULATION VALUES:
- Platelet count 330,000
- Prothrombin time 13.9 min

DIAGNOSTIC CONSIDERATIONS:
- Chronic EBV infection—based on results of laboratory assessment
- Hepatitis A, B, and C—ruled out based on negative serology

LIVER BIOPSY RESULTS:
- Multinodular microvesicular steatosis in 10% of hepatocytes
- Foam cells in portal space and in fibrous tissue

REPEAT LIVER BIOPSY RESULTS:
- Reduced steatosis
- Micronodular cirrhosis

DIAGNOSTIC CONSIDERATION:
- Niemann-Pick disease—based on liver and intestinal biopsy results; ruled out

LAL-D DIAGNOSIS
- Low LAL activity in enzyme-based blood test

ONGOING PRESENTATION:
- Diarrhea

IMAGING RESULTS:
- Hepatosplenomegaly without adrenal calcifications on CT

PATIENT REFERRED TO PEDIATRIC GASTROENTEROLOGY DEPARTMENT—SUSPECTED METABOLIC DISEASE

FURTHER EVALUATION:
- GI bleeding

IMAGING RESULTS:
- Grade 2 esophageal varices on endoscopy

LABORATORY RESULTS—LIVER FUNCTION TESTS:
- ALT 193 U/L
- AST 192 U/L
- Total bilirubin 7.2 µmol/L

LABORATORY RESULTS—LIPID PANEL:
- LDL-c 4.3 mmol/L
- HDL-c 0.8 mmol/L
- Total cholesterol 5.5 mmol/L
- TGs 1.3 mmol/L

LABORATORY RESULTS—COAGULATION VALUES:
- Platelet count 98,000
- Prothrombin time 14.8 min

CURRENT MANAGEMENT:
- Propranolol for GI bleeding prophylaxis
- Vitamin K for prolonged bleeding times

KEY TAKEAWAYS
- Patients with LAL-D can develop severe morbidities in childhood and are at risk of progressive liver failure, premature atherosclerosis, and multiorgan damage
- Test for LAL-D in patients with unexplained hepatomegaly
- Suspect LAL-D in patients with persistently elevated ALT and dyslipidemia

*Normal values: ALT, 7-45 U/L; AST, 8-50 U/L; total bilirubin, 1.7-7.5 µmol/L; LDL-c <2.6 mmol/L (optimal); HDL-c ≥0.90 mmol/L; total cholesterol <4.4 mmol/L; TGs <1.0 mmol/L; platelet count, 150,000-500,000; prothrombin time, 11-15 min; PTT, 25-33 min.

Abbreviations: ALT, alanine aminotransferase; AST, aspartate aminotransferase; CT, computed tomography; EBV, Epstein-Barr virus; GI, gastrointestinal; HDL, high-density lipoprotein cholesterol; LAL, lysosomal acid lipase; LDL, low-density lipoprotein cholesterol; PTT, partial thromboplastin time; TGs, triglycerides.
LAL-D and your practice

- Do you have any patients in your practice whose liver disease has preceded other multiorgan manifestations?
- Are you currently managing any patients with unexplained hepatomegaly?
- After ruling out the most common causes of hepatomegaly, how do you determine the underlying cause of liver disease in your patients? When do you start to suspect LAL-D?

LAL-D REQUIRES EARLY DIAGNOSIS

- Unexplained hepatomegaly should prompt immediate testing for LAL-D
- Include LAL-D in the differential diagnosis of patients with persistently elevated ALT and dyslipidemia
  - An enzymatic blood test can confirm LAL-D; liver biopsy is not required