COULD IT BE LAL-D? THESE SIGNS AND LAB VALUES SHOULD RAISE SUSPICION FOR LAL-D[1-6]

Patients who have LAL-D may present with ***any*** of the following:

- ☑ LDL-c (mmol/L): ≥3.4[1,2,a,b] or HDL-c (mmol/L): ≤1.2[1,2,a,c] with
  - Persistently elevated ALT[1,3,a,d]
- ☑ Suspected FCH with any of the following[3]:
  - Persistently elevated ALT[1,3,a,d]
  - No family history[3]
- ☑ Suspected HeFH with any of the following[3]:
  - No confirmed mutation[3]
  - Persistently elevated ALT[1,3,a,d]
  - No family history[3]
- ☑ Suspected metabolic syndrome with any of the following[3,4]:
  - Persistently elevated ALT[1,3,a,d] and
    - LDL-c (mmol/L): ≥3.4[1,2,a,b] or
    - HDL-c (mmol/L): ≤1.2[1,2,a,c]
  - BMI ≤95th percentile[3,5,e]
  - Normal fasting glucose/blood pressure[3,5]

TEST FOR LAL-D IF YOU RECOGNIZE ANY OF THESE SIGNS OR LAB VALUES IN YOUR PATIENTS[1-6]

[a]At baseline, patients in a clinical trial evaluating a potential treatment for LAL-D had a mean LDL-c of 5.4 mmol/L and a mean HDL-c of 0.8 mmol/L; 73% (48/66) of patients had ALT ≥1.5x ULN and <3x ULN, and 27% (18/66) of patients had ALT ≥3x ULN. An ALT ≥1.5x ULN according to specified gender-specific normal ranges was one of the eligibility criteria for enrollment.[1,5]

[b]In adult patients (mmol/L): LDL-c ≥4.1 (≥3.4 in patients on LLMs).[1,3,6]

[c]In adult patients (mmol/L): HDL-c ≤1.0 (males)/≤1.3 (females).[1,3,6]

[d]Above age- and gender-specific ULN.[3]

[e]BMI ≤95th percentile for age and gender.[3,5]

Abbreviations: ALT, alanine aminotransferase; BMI, body mass index; FCH, familial combined hyperlipidemia; HDL-c, high-density lipoprotein cholesterol; HeFH, heterozygous familial hypercholesterolemia; LAL-D, Lysosomal Acid Lipase Deficiency; LDL-c, low-density lipoprotein cholesterol; LLM, lipid-lowering medication; ULN, upper limit of normal.

AN ENZYMATIC DBS TEST CAN HELP DIAGNOSE LAL-D[3,7]

The DBS test is highly accurate and easy to prepare, transport, and interpret for testing in high-risk populations[7,8]

PREPARATION	STORAGE	TRANSPORT
		
A blood sample is spotted onto the DBS card; once completely dry, LAL activity is measured using a specific LAL inhibitor[7]	**DBS can be stored at room temperature** for short periods or at -20°C for longer periods[7]	DBS can be easily **shipped via regular mail**[8]

INTERPRETATION OF LAL ENZYME DBS RESULTS[5]	
RESULTS	**CLINICAL INTERPRETATIONS**
Affected	**LAL-D confirmed** by reduced LAL activity
Indeterminate[a]	**Repeat** with fresh sample
Not affected	**Rules out** LAL-D

[a]LAL above cutoff for affected, but below the normal reference range.

- Measurement of LAL activity in leukocyte and fibroblast samples can also be used to test for LAL-D[2]
- Testing for LAL-D may be simplified through the use of an EMR system
  - » If the LAL-D DBS test is available through your EMR system, create a preference list that includes LAL-D among the tests that you typically order for a liver or lipid diagnostic workup
- Family screening of identified patients is also critical[2]

TEST FOR LAL-D WITH AN ENZYMATIC DBS TEST[3,7]

Abbreviations: DBS, dried blood spot; EMR, electronic medical record; LAL, lysosomal acid lipase.

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