Undetectable HDL Cholesterol In A Patient With Flu-Like Illness

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CASE DESCRIPTION

An 85-year-old man presented to his family physician with complaints of generalized weakness, fatigue, loss of appetite, excessive sleeping, and mild laryngitis. He reported that his temperature taken orally at home that morning was 102.6 °F. These symptoms arose during the previous week, before which he had been healthy, exercising vigorously every day. His past medical history included type 2 diabetes, hypercholesterolemia, and Paget disease of bone, and medications included metformin and pravastatin. One year earlier he had a tick bite followed by appearance of a bullseye rash and took a course of doxycycline. He was not symptomatic after that and was not known to have any additional tick bites. He lived in Long Island, New York, and did not have a history of travel or sick contacts.

On physical exam the patient was alert but somewhat confused, with shaking chills. Cardiac and respiratory exam findings were normal. Laboratory testing included examination of a peripheral blood smear, which revealed intraerythrocytic ring forms, consistent with *Babesia* species, in 2.7% of the cells. The patient also had a lipid panel drawn (presumably because it was a visit to his family physician who ordered this as a routine) and was found to have an undetectable concentration of HDL cholesterol (HDL-C).[2] Other laboratory data are summarized in Table 1.

The patient was diagnosed with babesiosis and admitted to the hospital, where he was treated with atovaquone, azithromycin, and doxycycline. Follow-up molecular testing confirmed infection with *Babesia microti*. Parasitemia declined to <0.1%, symptoms improved greatly, and he was discharged after 3 days. Ten weeks after initial presentation, anemia and thrombocytopenia had resolved. HDL-C had returned to a value within the reference interval (52 mg/dL or 1.34 mmol/L), and ferritin, which had been high, also was within the reference interval (293 ng/mL).

QUESTIONS TO CONSIDER
• What laboratory findings are characteristic of babesiosis?
• What conditions can cause markedly decreased HDL-C?
• What caused this patient to have a very marked, but transient, decrease in HDL-C?

[2] Nonstandard Abbreviation: HDL-C, HDL cholesterol

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Table 1. Laboratory data.

Test	Result	Reference interval
Creatinine, mg/dL	1.54	0.50–1.20
Bilirubin, mg/dL	1.3	0.0–1.2
ALT,[a] IU/L	32	0–41
AST, IU/L	42	0–40
Cholesterol, mg/dL[b]	92	<200
Triglyceride, mg/dL[b]	316	<150
HDL-C, mg/dL	<4	<40 = increased risk
Ferritin, ng/mL[c]	1628	30–400
WBC, $\times 10^9$/L	7.3	4.8–10.8
RBC, $\times 10^{12}$/L	3.4	4.7–6.1
Hemoglobin, g/dL	10.8	14–18
Platelets, $\times 10^9$/L	113	150–350
Lyme serology (screening immunoassay and IgG Western blot)	Positive	Negative
Anaplasma/Ehrlichia by PCR	Negative	Negative

[a] ALT, alanine aminotransferase; AST, aspartate transaminase; RBC, red blood cells.
[b] To convert cholesterol in mg/dL to mmol/L, multiply by 0.02586. To convert triglyceride in mg/dL to mmol/L, multiply by 0.1129.
[c] The ferritin was measured 3 weeks after initial presentation.

Final Publication and Comments

The final published version with discussion and comments from the experts will appear in the March 2017 issue of *Clinical Chemistry*. To view the case and comments online, go to http://www.clinchem.org/content/vol63/issue3 and follow the link to the Clinical Case Study and Commentaries.

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