Clinical Case Study

An Unusual Case of Severe Hypertriglyceridemia and Splenomegaly

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CASE DESCRIPTION

A 49-year-old man of Japanese and British ancestry was referred to a metabolic diseases clinic for evaluation 5 months after nontraumatic spleen rupture requiring splenectomy. Prior history included hypertension and mild frontal headaches, but no other neurological or cardiovascular symptoms. The patient did not smoke and used alcohol infrequently. His mother had coronary artery disease, and his father had mild hypertension. There was no family history of consanguinity, splenomegaly, diabetes, or developmental delay.

The ruptured spleen weighed 727 g, and splenomegaly was associated with marked sinus histiocytosis spreading apart the lymphoid component. The overwhelming majority of histiocytes were foamy, and only a few had sea-blue appearance and reacted positively with periodic acid-Schiff (PAS), PAS and diastase, and May-Giemsa stains. A lipid storage disorder was suspected, but the histiocytes did not have the cytoplasmic linearity appearance of Gaucher cells and were otherwise nonspecific. Before splenic rupture, the patient's lipoprotein profile was reported as being normal, with no past recorded triglyceride measurement exceeding 2 mmol/L.

Two-month postsplenectomy laboratory investigations revealed combined hyperlipidemia with plasma total cholesterol, HDL-cholesterol, and triglycerides of 7.9 (normal <5.2), 1.4 (normal >1.0), and 4.3 (normal <1.7) mmol/L, respectively. Liver function tests were normal aside from increased γ glutamyltransferase (88 μg/L; normal <49 μg/L). Hemoglobin and leukocyte counts were normal with mild thrombocytosis. Physical examination at 5 months revealed obesity (body mass index 28.9 kg/m^2) and hypertension (resting blood pressure 140/100 mm Hg). Cardiovascular examination was normal. There were no xanthomata or xanthelasmata and no hepatomegaly. Left ventricular ejection fraction by echocardiogram was normal at 50%. Coronary artery computed tomographic scan revealed no obvious arterial occlusion, and brain MRI

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revealed nonspecific white matter changes consistent with ischemia. Carotid artery ultrasound showed no significant obstruction.

Six months postsplenectomy, the patient's plasma triglycerides were 17.2 mmol/L. He was placed on a seafood-rich, low-fat, low-sugar diet. At 8 months his plasma triglycerides had fallen to 1.5 mmol/L, while total cholesterol and HDL-cholesterol were 8.2 and 1.2 mmol/L, respectively, and apolipoprotein (apo)B and apoA-I concentrations were 1.19 and 1.35 g/L, respectively. The patient's dietary regimen was relaxed, and at 12 months triglycerides had again increased to 21.1 mmol/L. In view of findings suggesting cardiovascular disease and recurrent severe hypertriglyceridemia, aspirin and antihypertensive, and lipid-lowering therapies (atorvastatin 10 mg/day and salmon oil 3 g/day) were initiated. Genomic investigation was requested.

Questions to Consider
• What is the etiology of non-traumatic splenomegaly?
• What is the etiology of primary hypertriglyceridemia?
• How are common apo E isoforms related to an individual's lipid profile?

Final Publication and Comments

The final published version with discussion and comments from the experts will appear in the March 2008 issue of *Clinical Chemistry* in approximately 3-4 weeks. To view the case and comments online, go to http://www.clinchem.org/content/vol54/issue3/ and follow the link to the Clinical Case Studies.

Educational Centers

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