

A Woman with Pancreatitis and Hypertriglyceridemia

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CASE DESCRIPTION

A woman presented to the emergency department with abdominal pain, nausea, and vomiting. On examination, she had abdominal tenderness and a medical history of diabetes mellitus type 1, hypertension, end-stage renal disease, liver disease (hepatic steatosis), hypothyroidism, chronic obstructive pulmonary disease, and congestive heart failure. The patient denied alcohol use or abuse. Lipase was 680 U/L (reference interval, 13–60 U/L) and triglycerides were >4425 mg/dL [reference interval, <150 mg/dL (50 mmol/L)]. These results, along with clinical and radiologic findings, suggested a diagnosis of hypertriglyceridemia-mediated pancreatitis.

The patient was treated with insulin and heparin, but triglycerides remained >4425 mg/dL. Consequently, plasmapheresis was used to reduce the serum triglyceride concentrations on day 3 posthospital presentation, but triglycerides persisted at >4425 mg/dL (Table 1). The transfusion medicine team noticed the appearance of clear plasma during the next plasmapheresis course and called the laboratory to investigate.

Triglyceride testing in a reference laboratory followed (Table 1). The CDC method also revealed markedly increased triglycerides at 6620 mg/dL (74.8 mmol/L). However, triglycerides were 151 mg/dL (1.7 mmol/L) in a glycerol-corrected triglyceride assay (Roche Triglyceride/Glycerol Blanked Reagent, Roche Diagnostics). Glycerol concentrations were calculated (triglycerides, CDC - triglycerides, glycerol corrected) to be 6469 mg/dL (73.1 mmol/L) [reference interval, 3.5–32.7 mg/dL (0.04 – 0.37 mmol/L)]. In other words, 6469 mg/dL (73.1 mmol/L) of the 6620 mg/dL (74.8 mmol/L) in this sample represented free glycerol and not triglyceride-derived glycerol.

QUESTIONS TO CONSIDER
• What is measured in blanked and nonblanked triglyceride tests?
• What conditions could lead to these findings?
• How can the laboratory identify falsely increased triglycerides?

Table 1. Triglycerides and glycerol measurements.						
Test	Reference interval	Results				
		Day 1	Day 2	Day 3	Day 5	Day 9
Triglycerides, mg/dL (mmol/L)	<150 (3.69)	>4425 (50)	>4425 (50)	>4425 (50)	3971 (44.87)	1315 (14.86)
Triglycerides, CDC method, mg/dL (mmol/L)	<150 (3.69)		6620 (74.8)			
Triglycerides, glycerol-corrected, mg/dL (mmol/L)	<150 (3.69)		151 (1.71)			
Glycerol, calculated, mg/dL (mmol/L)	3.5-32.7 (0.04-0.37)		6469 (73.1)			
		Before apheresis		After apheresis		

Final Publication and Comments

The final published version with discussion and comments from the experts will appear in the October 2019 issue of *Clinical Chemistry*. To view the case and comments online, go to <http://www.clinchem.org/content/vol65/issue10> and follow the link to the Clinical Case Study and Commentaries.

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