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## Persistent Hemolysis in a Patient with Pancreatitis

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### CASE

A 43-year-old man with a history of acute and chronic pancreatitis presented with a 1-day history of severe burning and squeezing epigastric pain without nausea, vomiting, or diarrhea. The pain was similar to the patient's previous episodes of acute pancreatitis, for which he had had multiple hospitalizations. The patient's other diagnoses were hypertriglyceridemia, chronic kidney disease, and diabetes. On physical examination, the patient was afebrile and his abdomen was firm, with epigastric tenderness, guarding, and decreased bowel sounds.

On admission, serum lipase activity was 1506 U/L [reference interval (RI), 8–78 U/L]; amylase was not measured. Serum triglycerides were 1606 mg/dL (18.15 mmol/L) [RI, 55–320 mg/dL (0.62–3.62 mmol/L)]. The total cholesterol was 205 mg/dL (5.31 mmol/L) [RI, <200 mg/dL (<5.18 mmol/L)] and HDL was 14 mg/dL (0.36 mmol/L) [RI, 30–65 mg/dL (0.78–1.68 mg/dL)]. The creatinine concentration was 1.1 mg/dL (83  $\mu$ mol/L) [RI, 0.7–1.3 mg/dL (53.4–99.1  $\mu$ mol/L)] and blood urea nitrogen was 14 mg/dL (5.0 mmol/L) [RI, 8.9–20.6 mg/dL (3.2–7.4 mmol/L)]. Imaging by computed tomography demonstrated intrapancreatic pseudocysts and peripancreatic fat stranding. The patient was treated with bowel rest, aggressive intravenous fluid resuscitation, and pain management.

On day 2 of hospitalization, laboratory testing was complicated by significant hemolysis, raising the questions of in vivo vs in vitro hemolysis and whether or not to release laboratory results. Hemolysis had not been seen in blood drawn on day 1, but starting on day 2 every sample was hemolyzed in multiple tube types (including EDTA, lithium heparin, and sodium citrate tubes) throughout the course of the patient's hospital stay. Between the first and second day, the hemoglobin concentration decreased from 14.6–13.8 g/dL (146–138 g/L) [RI, 14.0–18.0 g/dL (140–180 g/L)], potassium increased from 4.2–6.3 mmol/L (RI, 3.4–4.8 mmol/L), sodium decreased from 137–133 mmol/L (RI, 136–145 mmol/L), and chloride was unaffected. Serum haptoglobin concentration was 56 mg/dL (0.56 g/L) [RI, 30–200 mg/dL (0.3–2.0 g/L)], and reticulocyte count was 1.69% (RI, 0.7–2.5%).

**Questions to Consider**

- What are the causes of in vivo and in vitro hemolysis and how are they distinguished?
- How does hemolysis affect test results?
- What is the likely cause of pancreatitis in this patient?
- What is the association between hemolysis and pancreatitis?

**Final Publication and Comments**

The final published version with discussion and comments from the experts will appear in the June 2012 issue of *Clinical Chemistry*. To view the case and comments online, go to <http://www.clinchem.org/content/vol58/issue6> and follow the link to the Clinical Case Study and Commentaries.

**Educational Centers**

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