

SHORT REPORT

Normal lipase serum level in acute pancreatitis: a case report

T Cartier, P Sogni, F Perruche, O Meyniard, Y-E Claessens, J-F Dhainaut, G Der Sahakian

Emerg Med J 2006;23:701–702. doi: 10.1136/emj.2006.037655

Diagnosis of acute pancreatitis relies on clinical symptoms and increase of serum lipase within 48 hours. We report the case of a patient admitted in the emergency department with a 24 hour history of acute abdominal pain. A computed tomography (CT) scan revealed an acute pancreatitis in spite of the lipase serum level being normal.

CASE REPORT

An 84 year old man was referred to our emergency department because of recurrent diffuse abdominal pain and vomiting for 24 hours. He had a history of type 1 diabetes mellitus, dysarthria, and left hemiplegia related to ischaemic stroke. He has previously been operated for suspected bowel related sepsis. He also had been treated for bladder polyps 2 years ago, and had had a left nephrectomy for unknown purpose. His current treatment included subcutaneous insulin, dalteparin (2500 U/day), omeprazole (20 mg/day), and venlafaxine (75 mg/day). He was not an alcoholic and did not smoke.

On examination the patient had a temperature of 36.9 °C, blood pressure 152/90 mm Hg, heart rate 116 beats/min, and a moderate tachypnea. He had jaundice, distension, and diffuse pain of the abdomen that did not radiate and was not relieved by movement. Rectal examination was normal. His main laboratory results were: white blood cell count $11\,900 \times 10^9$; C-reactive protein 169 mg/l; creatinine 261 $\mu\text{mol/l}$; glucose 31.7 mmol/l; arterial pH 7.39; partial pressure of carbon dioxide 25.3 mm Hg; carbon dioxide level 19 mmol/l; bilirubin 88 $\mu\text{mol/l}$; γ -glutamyl transferase 1.040 U/l; alkaline phosphatase 156 U/l; aspartate aminotransferase level 38 U/l; alanine aminotransferase 128 U/l; and lactate dehydrogenase 1.014 U/l. Serum lipase was in the normal range (44 U/l; normal 5–60 U/l).

An abdominal x ray revealed fecal impaction and gastric gas distension. Abdomen ultrasound was not informative because of gas interposition. A CT scan of the abdomen revealed acute inflammation involving the pancreas and peripancreatic fat, with fluid collection in the left renal area, gallstones, and thin biliary ducts.

The patient's management included pain relief with intravenous morphine, insulin, saline infusion, and insertion

of a nasogastric catheter. The patient was subsequently admitted to the gastroenterology unit. Subsequent lipase level readings remained in normal range. At day 7, he underwent endoscopic retrograde cholangiopancreatography (ERCP), which revealed gallstones in the neck of and inside the gallbladder; the biliary duct was stented. The lipase level increased to 103 U/l two days after the procedure. At day 16, a second ERCP allowed sphincterotomy for gallstone removal. The patient died of cardiac arrest after the procedure. Necropsy was not performed.

DISCUSSION

The gold standard for diagnosis of acute pancreatitis includes suggestive clinical features with elevation of lipase within 48 hours above threefold the normal range, assisted by radiological investigation when necessary.¹ Lipase is a 48 kD enzyme involved in digestion and mainly secreted by exocrine pancreas. During acute pancreatitis, serum lipase increases within four to eight hours, peaks at 24 hours, and remains elevated for one to two weeks, with a half-life between 7 and 14 hours. It is excreted by the ductal system and kidneys. Thus, impaired renal function leads to an increased level of lipase. In routine practice, lipase levels can be useful for physicians in the detection of this disorder.² A recent review of the literature reported that the estimated negative predictive value of lipase was between 94% and 100% (table 1).² So a normal lipase level is relevant to rule out diagnosis of acute pancreatitis. However, the lipase level was not related to severity, suggesting that severe pancreatitis could be associated with initial lipase above normal range and below the usual threefold threshold.³ Our patient had clinical and radiological evidence of acute pancreatitis and fulfilled several severity criteria; he developed an acute renal failure with metabolic acidosis and the CT scan revealed D stage according to the Balthazar scale. Although all the conditions were associated, our patient had no increase of serum lipase until ERCP was performed. This is unusual; a perusal of the literature revealed a single case of asymptomatic postoperative pancreatitis with normal serum lipase, serum amylase, and urinary amylase, which was diagnosed on a CT scan taken for another indication.⁴

Table 1 Value of serum lipase in the diagnosis of acute pancreatitis²

	No of patients	Sensitivity	Specificity	Positive predictive value	Negative predictive value
Kylanpaa-Back, <i>et al</i> , 2002	237	55	99	88	94
Treacy, <i>et al</i> , 2001	328	67	97	80	94
Gumaste, <i>et al</i> , 1993	170	100	99	99	100
Panteghini and Pagani, 1989	54	100	81	93	100
Hemingway, <i>et al</i> , 1988	20	100	96	95	100
Steinberg, <i>et al</i> , 1985	216	87	99	95	97

Acute pancreatitis is frequently encountered in the emergency room, and the diagnosis is usually based on clinical and laboratory data. On the basis of our atypical findings, we stress the possibility of acute pancreatitis presenting without a rise in blood lipase levels.

Authors' affiliations

T Cartier, F Perruche, O Meyniard, Y-E Claessens, J-F Dhainaut, G Der Sahakian, Paris Descartes University, Faculty of Medicine; Assistance Publique—Hôpitaux de Paris; Department of Emergency Medicine, Hôpital Cochin, Paris, France
P Sogni, Paris Descartes University, Faculty of Medicine; Assistance Publique—Hôpitaux de Paris; Department of Gastroenterology, Hôpital Cochin, Paris, France

Competing interests: none declared

Correspondence to: Dr G Der Sahakian, Department of Emergency Medicine, Hôpital Cochin, 27 rue du Faubourg Saint-Jacques F-75679 Paris Cedex 14, France; guillaume.der-sahakian@cch.aphp.fr

Accepted for publication 20 April 2006

REFERENCES

- 1 **French Consensus Conference on Acute Pancreatitis: Conclusions and Recommendations**. Paris, France, 25–26 January 2001. *Eur J Gastroenterol Hepatol* 2001;**13**(suppl 4):S1–13.
- 2 **Al-Bahrani AZ**, Ammori BJ. Clinical laboratory assessment of acute pancreatitis. *Clin Chim Acta* 2005;**362**:26–48.
- 3 **Lankisch PG**, Burchard-Reckert S, Lehnick D. Underestimation of acute pancreatitis: patients with only a small increase in amylase/lipase levels can also have or develop severe acute pancreatitis. *Gut* 1999;**44**:542–544.
- 4 **Mayersak JS**, Viviano CJ, Babiarz JW. Computed axial tomography pancreatitis: an atypical asymptomatic postoperative disease without serum or urinary enzyme evaluation. *Wis Med J* 1997;**96**:25–28.