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Case report

A rare entity in ED: Normal lipase level in acute pancreatitis

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ABSTRACT

Acute pancreatitis can have a variable presentation and diagnosis is based on clinical presentation, serum amylase and lipase levels and computed tomography. Negative predictive value of serum lipase in diagnosing acute pancreatitis is approximately to 100 percent and a normal blood lipase level in acute pancreatitis is an extremely rare condition. Here we reported two cases with normal serum amylase and lipase levels.

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1. Introduction

Acute pancreatitis has an incidence of approximately 40 cases per year per 100,000 adults, and has an overall mortality of 5% as well as an increase in mortality with age and multiorgan failure up to 47%.^{1,2} Diagnosis is based on clinical presentation, serum amylase and lipase levels, and computed tomography (CT).³ Recent literature has reported a negative predictive value of serum lipase in diagnosing acute pancreatitis to be between 94% and 100%, and a normal blood lipase level in acute pancreatitis is an extremely rare event.⁴ Here we reported two cases with normal serum amylase and lipase levels.

2. Case 1

A 49-year-old man presented to the emergency department (ED) with epigastric pain and emesis for 72 h. He was admitted to another hospital with these complaints on day 1, and discharged with a diagnosis of gastritis. His medical history was unremarkable and contained no drug use. He was not an alcoholic or smoker. Vital signs were within normal limits. On examination, he had an

epigastric tenderness without guarding or rebound tenderness. He did not have jaundice or distension, and the pain did not radiate and was not relieved by movement. Intravenous (IV) access was obtained and blood samples were taken. Pantoprazole 40 mg (IV) and Metoclopramide hydrochloride 10 mg with normal saline was started. His laboratory results were: white blood cells $11,400 \times 10^3 \text{ mm}^3$; aspartate aminotransferase level 30 U/l; alanine aminotransferase 44 U/l; creatinine 0.9 mg/dL; lactate dehydrogenase 180 mmol/L; amylase 68 U/L; lipase 34 U/L; C-reactive protein 5.6 mg/dL; and bilirubin levels within normal levels. Ultrasonography (USG) revealed normal findings of gall bladder and biliary tracts without calculus or sludge. The pancreas could not be interpreted because of gas interposition. Patient's symptoms were not relieved with treatment. A contrast enhanced abdominal CT showed acute inflammation of pancreas and peripancreatic fat without necrosis or free fluid (Fig. 1a). Also, he had normal findings of biliary and portal system. He was admitted to the gastroenterology department and treated with bowel rest, hydration, and pain control. Subsequent lipase and amylase levels did not increase. His lipid panel was within normal values. On the fourth day of admission, the patient was discharged from hospital at his own request.

3. Case 2

A 41-year-old man was referred to the ED with epigastric pain radiating to his back for 3 days. He had a history of hypertriglyceridemia. His vital signs were within normal limits. On

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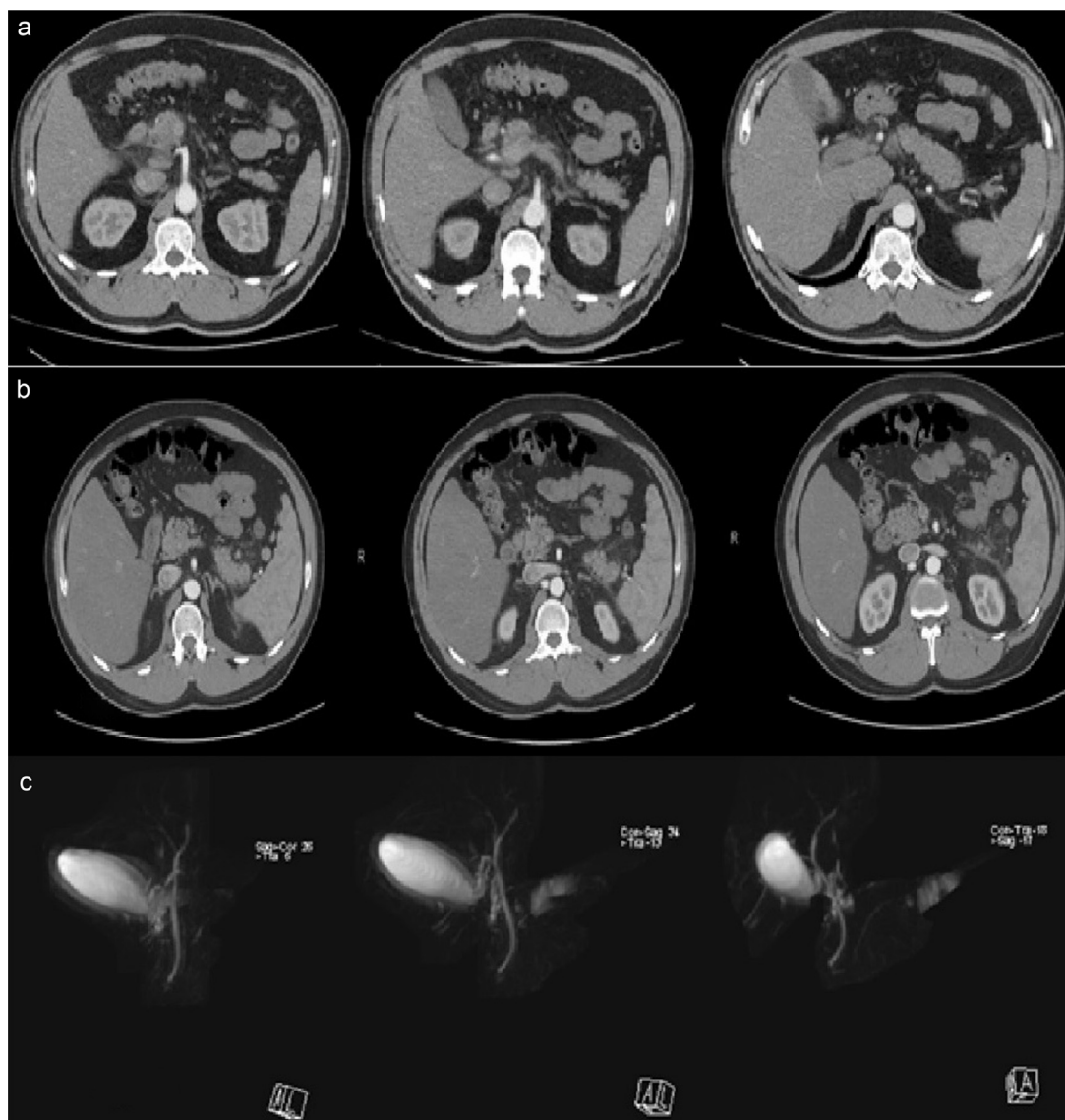


Fig. 1. a). A contrast enhanced abdominal CT showed acute inflammation of pancreas and peripancreatic fat. b). Abdominal CT showed acute inflammation of pancreatic tail and peripancreatic fat without necrosis or free fluid. c). MRCP revealed normal findings of gall bladder, biliary tract and common bile duct.

examination he had an epigastric tenderness without guarding or rebound tenderness. He was not an alcoholic or smoker and also did not use his drugs for hypertriglyceridemia. An IV access was obtained and blood samples were taken. IV Pantoprazole 40 mg and Metoclopramide hydrochloride 10 mg with normal saline was started. His laboratory results were: white blood cells $9,26 \times 10^3 \text{ mm}^3$; aspartate aminotransferase level 14 U/l; alanine aminotransferase 36 U/l; creatinine 1.1 mg/dL; lactate dehydrogenase 112 mmol/L; amylase 38 U/L; lipase 30 U/L; C-reactive protein 12,7 mg/dL; and bilirubin levels within normal levels. USG revealed normal findings of gall bladder and biliary tracts without calculus or sludge. Pancreas could not be interpreted because of gas interposition. Patient's symptoms were not relieved with treatment. A contrast enhanced abdominal CT showed acute inflammation of pancreatic tail and peripancreatic fat without necrosis or free fluid (Fig. 1b). Also, he had normal findings of biliary and portal system. He was admitted to the gastroenterology department and treated with bowel rest, hydration, and pain control. Subsequent lipase and amylase levels did not increase. His lipid panel results were: triglyceride 806 mg/dL; HDL cholesterol 21 mg/dL; and LDL

cholesterol 76 mg/dL. At the third day of admission he underwent magnetic resonance (MR) imaging of abdomen and cholangiopancreatography (MRCP). Abdomen MR revealed the same findings as CT. MRCP revealed normal findings of gall bladder, biliary tract, and common bile duct without calculus, sludge, or mass effect (Fig. 1c).

4. Discussion

Acute pancreatitis has an incidence of approximately 40 cases per year per 100,000 adults. The overall mortality of acute pancreatitis is 5%, and an increase in mortality with age and multi-organ failure up to 47% is reported in recent literature.^{1,2} According to the guidelines by the American College of Gastroenterology, the diagnosis of acute pancreatitis requires the presence of the two of the following three criteria: 1) characteristic abdominal pain; 2) serum amylase and/or lipase more than threefold the upper limit of normal; and 3) CT scan findings compatible with acute pancreatitis.³ Serum amylase can be normal in acute or chronic pancreatitis, hypertriglyceridemia-induced pancreatitis, or in late

presentations. However, a normal blood lipase level in acute pancreatitis is an extremely rare event.^{4,5} Recent literature has reported a negative predictive value of serum lipase in diagnosing acute pancreatitis to be between 94% and 100%.⁶ Therefore, normal lipase level in the setting of acute abdominal pain is often used to rule out a diagnosis of acute pancreatitis. In our cases, patients' lipase and amylase levels were within normal limits at admission and subsequent days. Both amylase and lipase levels may remain normal if destruction of acinar tissue during previous episodes precludes release of sufficient amounts of enzymes. The serum of patients with hypertriglyceridemia may contain a circulating inhibitor that must be diluted before an elevation in serum amylase can be detected.⁷ While 20% of patients are idiopathic, alcohol use, gallstones, hypertriglyceridemia (>1000 mgr/dL), hypercalcemia, drugs, endoscopic retrograde cholangiopancreatography (ERCP), and trauma account for most cases of acute pancreatitis.⁴ In these patients, none of the etiologic factors were determined. One patient had hypertriglyceridemia (806 mg/dL). This value considered the cause of acute pancreatitis, but literature suggests that the triglyceride threshold value to causing pancreatitis has been established at 1000 mg/dL.² Also it is possible that this presentation was an acute attack on chronic secondary to longstanding or chronic pancreatitis caused by hypertriglyceridemia, but this is an unlikely explanation based on clinical and radiographic findings. CT and MR did not reveal any calcifications or fibrosis in the pancreas commonly associated with

chronic pancreatitis, so we believe that both of the patients had their first episode of acute pancreatitis.

5. Conclusion

In conclusion, acute pancreatitis can have a variable presentation, and physicians caring for patients who presented to the ED with epigastric pain should be aware despite normal amylase and lipase levels. In appropriate clinical conditions, further imaging modalities may be helpful.

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