



BRIEF ANSWERS
TO SPECIFIC
CLINICAL
QUESTIONS

Q: When should serum amylase and lipase levels be repeated in a patient with acute pancreatitis?

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A: In general, repeating serum amylase and lipase levels has no value once the diagnosis of acute pancreatitis has been made. In gallstone-related acute pancreatitis (ie, in most cases), delaying surgery for several days for the pancreas to “cool down” is common practice, but repeating serum pancreatic enzyme levels daily during this period is of no prognostic value, as the levels do not correlate with the severity, course, or outcome of the acute pancreatitis.¹⁻³ Rather, the decision to proceed with treatment should be based on clinical measures, such as improvement of pain or increasing appetite.

Repeated pancreatic enzyme tests have diagnostic value, though. For example, in mild acute pancreatitis, symptoms tend to resolve in less than 1 week, whereas in severe cases, not only do symptoms persist beyond 1 week, but complications (new symptoms) also develop after the first week. In such cases, serum amylase and lipase levels may be repeated when the patient has signs and symptoms of persisting pancreatic or peripancreatic inflammation, blockage of the pancreatic duct, or development of a pseudocyst,³ but the purpose of retesting the levels is to diagnose complications, not to monitor the status of the pancreas. However, imaging tests generally have a higher sensitivity than serum amylase and lipase levels for diagnosing complications of acute pancreatitis.

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■ MAKING BEST USE OF SERUM PANCREATIC ENZYME LEVELS

The diagnosis of pancreatitis requires two of the following three features: abdominal pain characteristic of acute pancreatitis, a serum amylase or lipase level at least three times the upper limit of normal, and characteristic findings of acute pancreatitis on computed tomography (CT).³ In most patients, initial CT is not clinically warranted. It is warranted for patients who are transferred from other institutions after a few days of care, when the diagnosis of acute pancreatitis is in doubt, or when traumatic pancreatitis is suspected. Contrast-enhanced CT may be required at intervals during the hospitalization to detect and monitor the course of intra-abdominal complications of acute pancreatitis, such as the development of necrosis, fluid collections, and vascular complications.

A serum amylase or lipase level greater than three times the upper limit of normal is characteristic of acute pancreatitis and almost excludes other conditions associated with elevated nonpancreatic enzyme levels.⁴ Conditions associated with abdominal pain and elevation of serum amylase and lipase include perforated ulcer, mesenteric ischemia, and ruptured ectopic pregnancy (TABLE 1, TABLE 2).³

Amylase is also noted in salivary glands, fallopian tubes and cyst fluid, testes, lungs, thyroid, tonsils, breast milk, sweat, tears, and some malignant neoplasms. Serum lipase is often considered a more specific marker of acute pancreatitis than serum amylase, but recent data cast doubt on this.⁵ ■

Elevated amylase and lipase levels are useful diagnostically, not prognostically

TABLE 1

Conditions associated with serum lipase elevation

WITH ABDOMINAL PAIN

Pancreatic conditions

Acute pancreatitis
 Chronic pancreatitis (acute exacerbation)
 Interventions such as endoscopic retrograde cholangiopancreatography
 Surgery
 Trauma

Other conditions

Acute cholecystitis
 Appendicitis
 Diabetic ketoacidosis
 Inflammatory bowel disease
 Intestinal obstruction
 Mesenteric infarction

WITHOUT ABDOMINAL PAIN

Malignancy

Duodenum
 Esophagus
 Gastroesophageal junction
 Liver
 Small bowel
 Stomach
 Tongue

Other causes

Benign hyperlipasemia
 Esophagitis
 Familial hyperlipasemia
 Liver failure
 Renal failure

TABLE 2

Conditions associated with serum amylase elevation

WITH ABDOMINAL PAIN

Pancreatic conditions

Acute pancreatitis
 Chronic pancreatitis (acute exacerbation)
 Interventions such as endoscopic retrograde cholangiopancreatography
 Surgery
 Trauma

Other conditions

Appendicitis
 Diabetic ketoacidosis
 Fallopian and ovarian cyst
 Intestinal obstruction
 Mesenteric infarction
 Peritonitis
 Ruptured ectopic pregnancy
 Salpingitis

WITHOUT ABDOMINAL PAIN

Parotid gland conditions

Inflammation, trauma, surgery
 Radiation injury of head and neck

Malignancy

Breast
 Colon
 Lung
 Multiple myeloma
 Ovary
 Pancreas
 Pheochromocytoma
 Thymoma

Other conditions

Benign hyperamylasemia
 Chronic alcoholism
 Liver failure
 Macroamylasemia
 Renal failure

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