ONE MINUTE CONSULT

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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Elevated amylase and lipase levels are useful diagnostically, not prognostically

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]

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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