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Beyond the Pancreas: A Lesson in Lipase Elevation Ryan Threadgill MD, Adam Obley MD Portland VA Medical Center



Introduction

This is a case of an elderly man with gastrointestinal bleed from duodenal ulcerations and an elevation in lipase >600 in which the elevated lipase is thought to be from his duodenal ulcers. It serves as an opportunity to review the differential diagnosis of an elevated lipase and as a reminder that not all elevations in lipase are due to pancreatitis.



Discussion

When one encounters an elevation in lipase, especially one that is greater than 3 times the upper limit of normal it is natural to jump to pancreatitis or other pancreatic pathology as the primary cause. However, it is important to remember that lipase is also produced in the hepatobiliary system and in many parts of the intestine. Especially in patients with chronic kidney disease, any hepatobiliary pathology (cholecystitis, liver injury) or intestinal injury (enterocolitis, inflammatory bowel disease, celiac disease, and peptic ulcer disease) can produce a clinically significant elevation in lipase. There are other rarer causes such as macrolipasemia, sarcoidosis, and drug-induced elevations (DPP4 inhibitors, GLP1 agonists) that should be considered as well.

Case Description

A 76 year-old man presented to the hospital with an acute gastrointestinal bleed and was found to have ulcers of the duodenal bulb not requiring endoscopic intervention. He was treated with an intravenous proton pump inhibitor and once he was found to be hemodynamically stable he was discharged home.

PMH and Medications

Stage 3 chronic kidney disease, Type 2 diabetes, diet controlled Atrial fibrillation, on aspirin Heart failure with preserved ejection fraction, on furosemide BARRETT'S ESOPHAGUS: Established by prior biopsy, seen on this exam. Margins from mouth: proximal 36 cm, distal 40 cm, Z-line 40 cm, lower esophageal sphincter 40 cm, length 4 cm. Comments: No inflammation or nodularity. No bx taken as exam was for GI Bleed. Image(s) taken.

HIATAL HERNIA: Type: Regular, type 1. Landmarks from mouth: diaphragm 43 cm, Zline/Gastroesophageal junction 40 cm. Cameron erosions not present.

OTHER FINDING: Starting location: Body. Ending location: Body. Description: No fresh or old heme seen .

MUCOSAL ABNORMALITY (STOMACH OR DUODENUM): Starting location: Duodenal Bulb. Ending location: Duodenal Bulb. Description: erosions, ulcers. Rate of bleed: Inactive. Comments: 4 mm clean based superficial ulcer and linear erosion in the duodenal bulb. Image(s) taken.

MUCOSAL ABNORMALITY (STOMACH OR DUODENUM): Starting location: Antrum. Ending location: Antrum. Description: erosions. Rate of bleed: Inactive. Image(s) taken.

Pancreatitis Diagnostic Criteria

- Has to meet 2 of 3 criteria
- Lipase >3x the upper limit of normal

Where is Lipase Made?

- Pancreas
- Liver in hepatocytes and endothelial cells

Teaching Points

 Not all lipase is from the pancreas
Lipase is cleared by the kidney, so in patients with chronic kidney disease maintain a broader differential
All that being said, lipase has good sensitivity, specificity, and likelihood ratios in the diagnosis of pancreatitis

Labs:

CBC: Hg 6.7 g/dL (baseline 15), WBC 14,000/mm³ Lipase >600 IU/L (no prior)

Imaging:

CT scan was performed 2 months after discharge given continued elevation in lipase and did not reveal any evidence of pancreatitis

- Imaging findings consistent with pancreatitis
- Mid-epigastric abdominal pain, classically radiating straight through to back

How good is lipase in pancreatitis?

- Sensitivity: 64-100%
- Specificity: 99-100%
- +LR: 87
- -LR: 0.13

 Intestine – gastric chief cells of stomach, epithelial cells of the esophagus, gastroesophageal junction, duodenal bulb, and colon

Where is Lipase Cleared?Kidneys

What are the relative concentrations of lipase?

• The concentration of lipase is 100 times greater in the pancreas than in the liver or the bowel

References

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