

# EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER  
DEPARTMENT OF EMERGENCY MEDICINE



Care Warriors

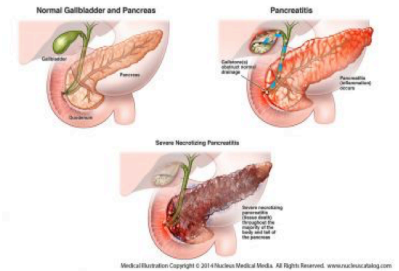
Author: Jee Won Cheong OMS-IV Editor: Benita Chilampath, DO

April 2017 | Vol 3 | Issue 31

## Acute Pancreatitis

A 61-year-old African American female with a past medical history of hypertension, diabetes mellitus Type 2 and cholelithiasis presents to the Emergency Department with abdominal pain that started last night. She says the pain is located in the epigastric region and started right after eating. She describes the pain as a constant, sharp pain that intermittently radiates to her right lateral side and her back. She has never experienced these symptoms prior to this episode. She has only tried over the counter famotidine which did not help. She stated she had one episode of loose stool, nausea and non-bloody non-bilious vomiting but denies weakness, fever or recent travel. She denies alcohol usage but has a 30-pack-year smoking history. Patient is febrile and hypertensive but all other vitals are within normal limits. On physical exam, patient has mild epigastric tenderness but soft and normal bowel sounds. There are no signs of guarding, rebound tenderness, or Murphy's sign. She did have mild periumbilical ecchymosis. Labs show elevated lipase levels. Which of the following is the most appropriate next step for this patient's condition?

- A. IV Normal Saline 1 L and put on NPO
- B. Place on Protonix 40 mg QD
- C. CT of the abdomen and pelvis
- D. Surgical exploratory laparotomy
- E. GI consult



©2014 Nucleus Medical Media®  
Pancreatitis Pathology Diagram

**Acute pancreatitis is defined as an acute inflammatory process of the pancreas.**

(A) shows a normal depiction of the pancreas and gallbladder with no signs of pathology (B) shows gallstones obstructing normal drainage at the Ampulla of Vater and Sphincter of Oddi resulting in inflammation of the pancreas (C) shows severe necrotizing pancreatitis throughout the majority of the body and tail of the pancreas via tissue death

*EM Case of the Week is a weekly "pop quiz" for ED staff.*

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

BROWARD HEALTH MEDICAL CENTER

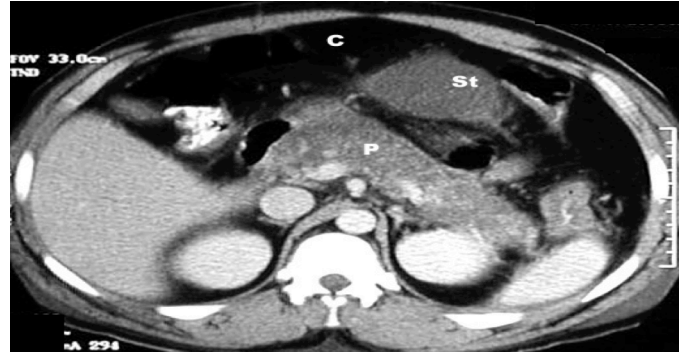
Department of Emergency Medicine  
1625 SE 3rd Avenue  
Fort Lauderdale, FL 33316

**The correct answer is A.** The patient should be started on IV fluids, Normal Saline 1 L and put on NPO.

Acute pancreatitis is the acute process of inflammation of the pancreas. The leading causes of pancreatitis include alcohol and gallstones. The reported annual incidence is between 4.9 and 35 cases per 100,000 population. The incidence of acute pancreatitis is increasing in many European, especially Scandinavian, countries due to increased alcohol consumption. It is also the leading gastrointestinal cause of hospitalization in the United States. Mortality in the first two-week period is usually due to SIRS or organ failure, while after two weeks is usually from sepsis and its complications.

### Pathophysiology

The pancreas is an organ in the posterior epigastric region that is responsible for insulin and glucagon production (endocrine pancreas) and secretion of digestive enzymes (exocrine pancreas) leading to fat, protein and carbohydrate metabolism. A healthy pancreas normally makes digestive enzymes that are later packaged into zymogens as proenzymes. Thus, after a meal, the vagal nerve, CCK, GRP, VIP release these proenzymes in to the pancreatic duct, and trypsin activates the proenzymes. A feedback mechanism limits pancreatic enzyme activation after appropriate food metabolism. Acute pancreatitis occurs when this process is malfunctioning and there is an imbalance of enzymes resulting in ductal cell injury. In addition, macrophages release cytokines that exacerbate inflammatory responses, such as TNF- $\alpha$ , IL-6 and IL-8. Eventually, there are elevated levels of pancreatic enzymes. Parenchymal edema and fat necrosis occurs first, and due to hemorrhage and dysfunction of the gland, the inflammation worsens to necrotizing or hemorrhaging pancreatitis. Pseudocysts can form as well.



### Signs/Symptoms

Some of the common signs and symptoms include epigastric pain that radiates to the back (~50% cases), nausea, vomiting, abdominal distension, hypoactive bowel sounds, jaundice, fever, tachypnea, hypoxemia, and ecchymosis in the periumbilical region (Cullen's sign) or along the flank (Grey Turner sign).

### Diagnosis/Imaging

Blood workup would include amylase, lipase levels greater than 3 times the upper normal limit (last longer and more sensitive to alcohol-related), CBC (infection, anemia), CMP (electrolyte imbalances), LFTs, and LDH.

There is no first line imaging recommendation. However, a RUQ US can be ordered to check for gallstones, and CT abdomen to visualize enlargement of pancreas, necrosis or cysts.

### Treatment

Aggressive fluid resuscitation at 5-10 mL/kg/hr of NS or LR is critical. For hypotensive patient's 20 mL/kg of IV fluid is given for 30 min, and then 3 mL/kg/hr for 8-12 hrs. Patient will be placed NPO to rest pancreas and will be on pain control. Antibiotics may be used if there is suspicion of extrapancreatic infection.

For a list of educational lectures, grand rounds, workshops, and didactics please visit [BrowardER.com](http://BrowardER.com) and **click** on the **"Conference"** link.

*All are welcome to attend!*

## Ranson's Criteria for Acute Pancreatitis

### - Ranson's Prognostic Criteria

NON-GALLSTONE PANCREATITIS	GALLSTONE PANCREATITIS
<b>At Admission</b>	
Age >55 yr	Age >70 yr
White blood cells >16,000/mm <sup>3</sup>	>18,000/mm <sup>3</sup>
Blood glucose >200 mg/dL	>220 mg/dL
Serum lactate dehydrogenase >350 IU/L	>400 IU/L
Serum aspartate aminotransferase >250 IU/L	>250 IU/L
<b>During Initial 48 hr</b>	
Hematocrit decrease of >10 %	>10%
Blood urea nitrogen increase of >5 mg/dL	>2 mg/dL
Serum calcium <8 mg/dL	<8 mg/dL
Arterial po <sub>2</sub> <60 mm Hg	NA
Serum base deficit >4 mEq/L	>5 mEq/L
Fluid sequestration >6 L	>4 L

Sliesenger and Fordtran's Gastrointestinal and Liver Disease ninth edition

The prognosis of acute pancreatitis is related to the severity of the symptoms. The Ranson's Criteria is used as a clinical indicator of severity and in the long term, is also used as an objective record of progress. The criteria is slightly different for gallstone pancreatitis.

Using the 11 component score, the mortality rate is 0-3% when the score is <3, 11-15% when the score is 3-5, and the rate jumps to 40% when the score is greater than 6. This score systems continues to be used despite some studies showing this score system to be a poor predictor of severity.

## Take Home Points

- Acute pancreatitis is an acute inflammatory process of the pancreas. Mild acute pancreatitis is characterized by the absence of organ failure and local or systemic complications. Moderately severe acute pancreatitis has no organ failure or transient organ failure (<48 hrs) and severe acute pancreatitis involves persistent organ failure (>48 hrs) that may involve one or more organs.
- The diagnosis of acute pancreatitis is mainly a clinical diagnosis, especially with an acute presentation of symptoms (within 1-2 days).
- In acute cases of mild pancreatitis, imaging studies are not usually required unless other organs are believed to be involved.
- Mainstay of treatment for pancreatitis is IV fluids and put on NPO with appropriate pain medications. There is no one medication that cures all.



### ABOUT THE AUTHOR

This month's case was written by Jee Won Cheong. Jee Won is a 4<sup>th</sup> year medical student from Nova Southeastern University College of Osteopathic Medicine. He did his emergency medicine rotation at BHMC in December 2016. Jee Won plans on pursuing a career in Family Medicine after graduation from NSU-COM.

### REFERENCES

- Tenner S, Baillie J, DeWitt J, et al. American College of Gastroenterology guideline: management of acute pancreatitis, 2013; 108:1400.
- Singh VK, Bollen TL, Wu BU, et al. An assessment of the severity of interstitial pancreatitis. Clin Gastroenterol Hepatol 2011; 9:1098.
- Swaroop VS, Chari ST, Clain JE. Severe acute pancreatitis. JAMA 2004; 291:2865.