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EM CASE OF THE WEEK

BROWARD HEALTH MEDICAL CENTER DEPARTMENT OF EMERGENCY MEDICINE

Grey Turner sign as shown above occurs in 3% of patients and represents retroperitoneal hemorrhage. Its presence suggests higher likelihood for pancreatic necrosis.

Acute pancreatitis is the leading gastrointestinal cause of hospitalization in the United States! It has an annual incidence of 4.9 to 35 per 100,000 in the population. Mortality is reported to be around 5% and usually results from development of SIRS in the first two weeks.

EM CASE OF THE WEEK

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.

Acute Pancreatitis

A 47 year old male presents to the ED complaining of abdominal pain and loss of consciousness that started 1 hour ago. He states after getting up during the night to use the restroom, he experienced sudden onset of severe right upper quadrant pain after which he felt nauseous and dizzy, and lost consciousness. He also admits to subjective fever, sweats, headache, and lightheadedness. Vital signs reveal T 99.1, HR 95, RR 16, BP 136/42, and O2 sat 99%. On physical exam he has a 5 cm laceration present on the right forehead which is bleeding and he is tender to palpation in the right upper quadrant. Which of the following is FALSE in regards to acute pancreatitis?

A. Patients may present with acute onset of severe epigastric pain radiating to back

B. Elevations in serum lipase levels occur earlier, last longer and have higher specificity compared to serum amylase

C. In a patient with characteristic abdominal pain and elevated serum amylase or lipase, imaging is not required for diagnosis

D. The Apache II score is a scoring system with high accuracy for predicting the severity of acute pancreatitis at the bedside

E. Prophylactic antibiotics are not recommended

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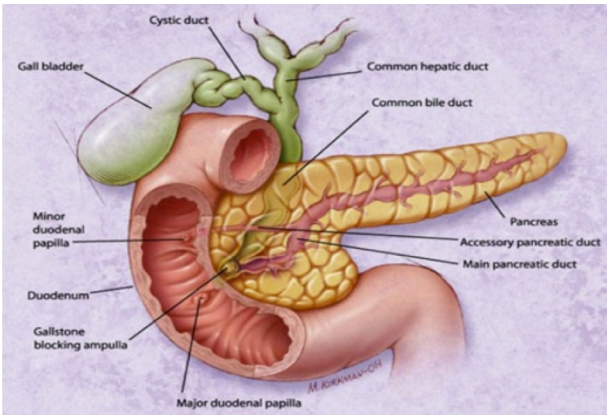

Take Home Points

- Most patients develop mild cases and recovery is estimated to be 3 to 5 days. 20% of patients develop severe cases with complications and/or organ failure.
- Gallstones are the most common cause followed by alcohol and hypertriglyceridemia.
- In a patient with characteristic abdominal pain and elevated serum amylase or lipase greater than 3 times the upper limit of normal, imaging is not required for diagnosis.
- Initial management includes supportive care (bowel rest, IV fluids, pain control, and correction of electrolyte abnormalities). Antibiotics should be given if infection is suspected, otherwise prophylactic antibiotics are not recommended.

Acute Pancreatitis

The correct answer is D. The APACHE II score (acute physiology and chronic health examination) is a scoring system based on 12 parameters (including temperature, MAP, heart rate, respiratory rate, A-a gradient or PO2, pH or HCO3, Na, K, Cr, Hct, WBC, GCS, age and chronic dx). It has a good negative predictive value and modest positive predictive value. Mortality is suggested to be < 4% with a score of <8 and 11-18% with a score > 8. Limitations of this scoring system include complexity for use, lack of ability to differentiate between classification of pancreatitis (interstitial versus necrotizing etc), and poor predictive value at 24 hrs. This scoring system along with many other scoring systems (Ranson's criteria, SIRS score, BISAP score etc) does not have high accuracy in predicting severity of pancreatitis and thus may not be used routinely. Nonetheless, the American Gastroenterological Association (AGA) recommends using the APACHE II system for predicting severity of acute pancreatitis and has other guidelines in place based on this scoring system.

Discussion:

Acute pancreatitis involves inflammation of the pancreas most commonly due to gallstones (35-40% cases). Other causes include alcohol use (30%), hypertriglyceridemia (1-4%), cigarette smoking, post-ERCP, hypercalcemia, trauma, drugs, infections, toxins, and autoimmune causes. When acute pancreatitis is suspected a good history should be obtained focusing on possible causes as mentioned previously and serum labs should be obtained (serum amylase, lipase, and complete metabolic panel). All patients should have an abdominal ultrasound on admission to evaluate for gallstones. An abdominal CT scan with contrast is helpful to identify severity of pancreatitis and presence of complications (including peripancreatic fluid collection, pseudocyst, and necrosis). Routine CT scan is not recommended unless diagnosis is uncertain since it does not improve clinical outcomes. Patients presenting with severe cases as seen by APACHE II score >8, persistent SIRS, elevated Hct, BUN, or Cr, age > 60 y/o, or underlying co-morbidities (cardiac, pulmonary) may need to be monitored in ICU setting. Patients with mild cases may need to be monitored in ICU setting as well based on unstable vital signs, electrolyte abnormalities, metabolic abnormalities, renal failure, or altered mental status.

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▶ **Differential diagnosis for acute pancreatitis includes**: peptic ulcer disease, acute cholecystitis, choledocholithiasis, acute cholangitis, perforated viscus, intestinal obstruction, hepatitis, mesenteric ischemia

▶ **Causes of elevated serum amylase other than acute pancreatitis include:** chronic pancreatitis, acute cholecystitis, parotitis, bowel obstruction/infarction, malignancy (ectopic producing tumor), acidosis, ketoacidosis, renal failure, ruptured ectopic pregnancy, salpingitis, alcohol, cirrhosis, eating disorders (anorexia nervosa, bulimia)

▶ **Causes of elevated serum lipase other than acute pancreatitis include:** chronic pancreatitis, pancreatic tumor, duodenal ulcer, acute cholecystitis, bowel obstruction, renal failure, celiac disease, DKA, HIV, drugs.

▶ **Management:**

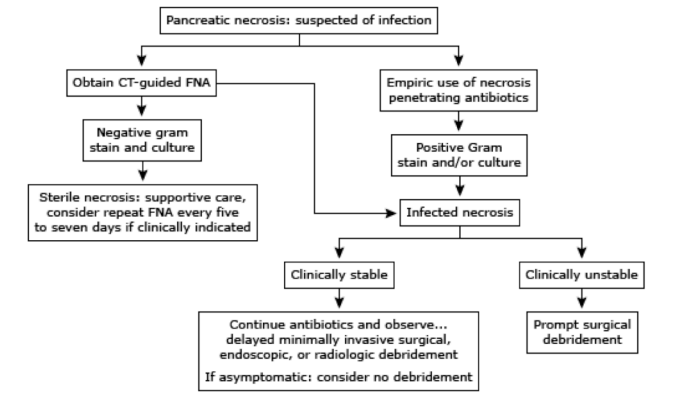
Fluids. Acute pancreatitis can result in third spacing of fluid and associated hypovolemia and hemoconcentration. Fluid resuscitation in the first 24 hours is associated with decrease in morbidity and mortality. Maintaining hydration helps to prevent hypotension, lactic acidosis, acute kidney injury, acute tubular necrosis, and risk for developing necrotizing pancreatitis. Isotonic crystalloids (normal saline or lactated Ringer's) can be used at a rate of 5-10 mL/kg/h. Lactated Ringer's is contraindicated in hypercalcemia. Patients need to be reassessed for fluid replacement following admission (especially in the first 6 hours and up to 48 hours) based on clinical appearance, vitals, Hct and BUN levels, and urine output. Aggressive fluid replacement after 48 hours is not advised due to risk for abdominal compartment syndrome (intra-abdominal pressure > 20 mmHg and new onset organ failure).

Pain Control. Addressing the patient's pain will help not only to make the patient more comfortable but also to aid in hemodynamic stability. Opioids are primarily used as they are effective, including hydromorphone, fentanyl, meperidine, and morphine.

Bowel Rest. Patients typically can resume oral feedings within 24-48 hours in cases of mild acute pancreatitis if nausea and vomiting, as well as pain have subsided, there is no evidence of ileus, and inflammatory markers have improved. Patients can begin with clear liquid diet and the diet can be advanced as tolerated.

Antibiotics. Prophylactic antibiotics are not recommended in patients despite the classification of pancreatitis (interstitial edematous acute pancreatitis versus necrotizing acute pancreatitis) or severity of pancreatitis (mild acute pancreatitis, moderately severe acute pancreatitis, or severe acute pancreatitis). If there is suspicion for infection, antibiotics should be given since extrapancreatic infections are associated with increased mortality and are present in 20% of patients.

Management of pancreatic necrosis



ABOUT THE AUTHOR:
This month's case was written by Maryam Abid. Maryam is a 4th year medical student from NSU-COM. She did her emergency medicine rotation at North Broward Medical Center in September 2015. Maryam plans on pursuing a career in Internal Medicine after graduation.