

Location: Emergency Room

Vitals: BP: 90/60 mm Hg; HR: 124/min; RR: 24/min; Temp: 37.2C (99F)

C.C: Sudden onset abdominal pain

HPI:

A 55-year-old white obese female is brought to the ER with abrupt onset of epigastric pain. The pain started 5 hours ago, is steady, boring and severe in nature and radiates to the back. It is made worse by lying supine and is better by sitting and leaning forwards. The patient also has nausea and vomiting. She denies any fevers or bowel or bladder problems. She has a past history of episodic right upper quadrant pain and fatty food indigestion, for which she never sought any medical advice. She has no allergies and is not taking any medications. The patient does not smoke and denies any alcohol use. Family history is non-contributory. Rest of the review of systems is unremarkable.

How would you approach this patient?

The initial approach should be to take some general resuscitative measures, a delay in which might be life threatening. Simultaneously, think of a differential diagnosis and order the relevant tests to rule in and rule out the disease process and its etiology. Remember you always need a thorough physical examination before establishing a diagnosis.

Order No. 1:

IV access, stat
Start IV fluids: Normal Saline, IV, continuous
Continuous BP monitoring
Pulse Oximetry, stat
EKG, 12 lead, stat

Results for Order No. 1:

Oxygen Saturation is 95% on room air
EKG shows sinus tachycardia without evidence of ischemia or infarction

Order physical exam:

General appearance
HEENT/Neck
Examination of CVS
Examination of lungs
Examination of Abdomen
Examination of Rectum
Extremities

Results of Physical Examination:

General appearance: Obese female, ill looking, diaphoretic, restless. HEENT - Normal; No JVD. Lungs are clear to auscultation and percussion bilaterally; Cardiovascular - S1 S2 normal, no murmurs, rub or gallop. Abdomen is soft, tenderness is present in the epigastric area but there is no rigidity, rebound or guarding; bowel sounds are hypoactive, no organomegaly or free fluid. Rectal - Normal sphincter tone, no hemorrhoids or fissures, stool is heme negative. Extremities - no edema, clubbing or cyanosis, no calf tenderness, peripheral pulses feeble.

Meanwhile the nurse tells you that the pain is worse

Order No. 2:

NPO
Fentanyl or Meperidine, IV, continuous
Phenergan, IV, stat, one time (for nausea)
Serum amylase, stat
Serum lipase, stat

LFTs, stat
Erect abdominal X-ray, portable, stat
CBC with differential, stat
BMP, stat
Calcium, stat
Call me when the lab results available

Results for Order No. 2:

BP - 94/70 mm Hg
Amylase - 500 IU/L; Lipase -160 IU/L
Hgb -13 g/dl, WBC - 14,000/uL, Platelet - 250,000/mm³, leftward shift in differential count
BUN - 30, Creatinine-1.1, Sodium -131 meq/L, Potassium - 3.6 meq/L, Chloride -101 meq/L,
Bicarbonate - 26 meq/L, Calcium -10.1 mg %
LFT- Total bilirubin - 6.0 mg %, Direct bilirubin - 4.5 mg %, ALT - 35 IU/L, AST - 40 IU/L,
Alkaline phosphatase - 190 IU/L
X-ray abdomen - No air under the diaphragm, no dilated bowel loops

Discussion:

Differential Diagnosis: This is a patient with acute epigastric pain. Your differential diagnosis should include acute gastritis, perforated duodenal ulcer, acute pancreatitis and acute cholecystitis. Important point here is the description of pain that radiates to the back, is made worse by lying supine and is better by sitting and leaning forwards. This is typical of acute pancreatitis and may also be seen with a perforated duodenal ulcer.

Confirming the diagnosis: The diagnosis of acute pancreatitis is confirmed by elevated amylase and lipase with the latter being more specific. These enzymes rise to three times their baseline values within 24 hours in 90 % cases. Besides, you need to order CBC with differential count, BMP, calcium, LFT to look for etiology and assess the severity of the disease that will guide you in the management of the patient. The severity of acute pancreatitis is assessed using the "Ranson's Criteria" which are not discussed here. A plain X-ray of the abdomen would help in ruling out air under the diaphragm and perforated duodenal ulcer that is high on the list of differential diagnosis.

An ultrasound imaging the liver, gall bladder and biliary tract is a useful initial investigation in patients with suspicion of gallstone pancreatitis and an abnormal LFT. However, ultrasound is a very poor modality for imaging the pancreas. On the other hand, the CT scan of the abdomen can miss gallstones and duct stones but has the advantage of visualizing the pancreas very nicely. It may be ordered when there is a doubt in the diagnosis or when you suspect complications such as necrotizing pancreatitis, pancreatic abscess or pancreatic pseudocyst (discussed in brief later on). Remember, that ultrasound and CT scan of the abdomen are not routinely indicated for establishing the diagnosis of acute pancreatitis but may be useful when indicated; although many may argue for ordering both these tests in most cases of pancreatitis.

Discussion - The above patient results suggest that the patient has acute pancreatitis with hypovolemia and prerenal azotemia.

Likely Etiology: The two most important causes are gallstones and alcohol. The past history of right upper quadrant pain and the LFT results suggest possibility of gallstones pancreatitis in this obese female. Besides, other causes to remember include hypertriglyceridemia (triglycerides>1000 mg %), viral infections (e.g. mumps), drugs (e.g. valproic acid, estrogen, thiazide diuretics, azathioprine, didanosine) and following ERCP. Establishing the etiology is important because unlike other causes where management is conservative, the latest recommendation for gallstone pancreatitis is early ERCP, biliary sphincterotomy and stone extraction. Many a times etiology is not established and is believed to be secondary to "occult biliary microlithiasis."

Order No. 3:

Transfer to ward or ICU (if unstable or has severe pancreatitis)
Bed rest

Pneumatic compression devices
Omeprazole, oral, continuous (for stress ulcer prophylaxis)
Urine output
Ultrasound of liver, gall bladder and biliary tract, stat

Results for order No. 3:

BP - 100/70

Ultrasound - multiple gallstones and dilated common bile duct

Meanwhile the patient continues to have pain but it is better than before

Order No. 4:

PT/aPTT, stat (preoperative preparation)

Gastroenterology consult for ERCP: Reason: Gallstone pancreatitis; requires possible intervention with ERCP. Please evaluate and treat.

If the case still continues, order:

Examine the patient 6 hours later

Order, repeat CBC with diff, BMP, Calcium next day.

Management:

In most patients, acute pancreatitis is a mild disease associated with only edema of the pancreatic tissue subsides spontaneously within five to seven days. These patients are managed conservatively.

1. They are kept NPO and put on IV fluids. In severe cases patients may be severely hypovolemic with prerenal azotemia, requiring massive amount of IV fluids for resuscitation. Correction of electrolytes especially hypocalcemia is important.
2. Pain control is achieved using narcotics like morphine, meperidine and fentanyl. Contrary to the previous belief, there is no data to suggest that morphine increases the sphincter of Oddi pressure and may aggravate acute pancreatitis or cholecystitis.
3. Nasogastric suction is reserved for patients with protracted nausea and vomiting or ileus and is not required routinely.
4. If the acute pancreatitis is secondary to gallstones (especially with total bilirubin >5 mg % or evidence of acute cholangitis), urgent ERCP and biliary sphincterotomy within 72 hours of presentation can improve outcome by reducing biliary sepsis. If this patient had no gallstones or the LFT was normal then it would be appropriate to manage just conservatively.
5. Acid suppression is necessary only in severely ill patient in ICU settings where the risk of stress ulcer gastrointestinal bleeding is high.

Once the pain subsides, the patient can be started on clear liquids and diet advanced as tolerated.

Complications:

a) Necrotizing Pancreatitis is a more severe form of pancreatitis that usually develops in the second week, requiring CT scan of the abdomen for diagnosis. It is associated with increased mortality and morbidity secondary to multisystem organ involvement including pulmonary (ARDS) and renal (ATN). The necrotic tissue is usually sterile but may get infected. A CT guided aspiration may be needed to confirm infection if patient has persistent fever, leukocytosis, and multisystem organ failure. In addition to the routine measures discussed above these patients require enteral feedings or TPN and antibiotics if infection is present. The antibiotic of choice is Primaxin (imipenem). Further a percutaneous drainage procedure or major surgical debridement may be needed in very sick patients with infected necrotic tissue.

b) Pseudocyst is suspected in presence of severe pain or persistently elevated amylase levels. These are diagnosed with CT scan of the abdomen. Asymptomatic, nonenlarging pseudocysts of less than 6 cm can be followed clinically with serial imaging studies.

Final Diagnosis:

Acute Pancreatitis, secondary to gallstones

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