

# GALLSTONE PANCREATITIS

## Mechanism

Acute pancreatitis is an inflammatory condition of the pancreas characterized clinically by abdominal pain and elevated levels of pancreatic enzymes in the blood. - Abnormal exocrine and endocrine function can occur during an acute attack

The mechanism by which the passage of gallstones induces pancreatitis is unknown but two factors have suggested as the possible initiating events

- 1) Reflux of bile into the pancreatic duct due to transient obstruction of the ampulla during passage of gallstones (“common channel theory”)  
→ Supported by studies that show common channel between CBD and pancreatic duct in 90% of those with history of gallstone pancreatitis vs. 20-30% in patients with cholelithiasis and no history of pancreatitis
- 2) Obstruction at the ampulla secondary to stone(s) or edema resulting from the passage of a stone

## Epidemiology

- Leading cause of acute pancreatitis in North America
- 40% of all cases of pancreatitis, 90% of all cases of non alcoholic pancreatitis
- Affects 3-8% of all patients with symptomatic gallstones, 30% of patients with stones less than 3mm in diameter
- For those with gallstones, the relative risk for acute pancreatitis (before cholecystectomy) was increased 14 to 35 times in men, and 12 to 25 times in women.
- 33% of those with history of gallstone pancreatitis will recur within 8 weeks if non-operative treatment pursued
- The risk of developing acute pancreatitis in patients with gallstones is greater in men; however, more women develop this disorder since gallstones occur with increased frequency in women

## Presentation

- Almost all patients with acute pancreatitis have acute steady upper abdominal pain, usually in the mid-epigastrium
- The pain of pancreatitis can last for days. Its onset is rapid, but not as abrupt as that with a perforated viscus, reaching maximum intensity in many cases within 10 to 20 minutes, and often has a band-like radiation to the back
- The abdominal pain is typically accompanied (in approximately 90 percent of patients) by nausea and vomiting, which may persist for many hour
- Restlessness, agitation, and relief on bending forward are other symptoms
- Patients with fulminant attacks may present in shock or coma

## Diagnosis

- The diagnosis of gallstone pancreatitis should be suspected if the patient has a prior history of biliary colic.

- All patients with a first attack of acute pancreatitis should have an abdominal ultrasound to search for gallstones, common duct stones, or signs of extrahepatic biliary tract obstruction
- A meta-analysis found that the serum ALT concentration was the most clinically useful parameter in patients with acute pancreatitis
  - a serum ALT concentration of 150 IU/L or more (approximately a threefold elevation) had a positive predictive value of 95 percent for the diagnosis of gallstone pancreatitis
- The aspartate aminotransferase (AST) concentration was nearly as useful as ALT, while the total bilirubin and alkaline phosphatase concentrations did not assist in making the diagnosis

#### Mild Disease Management

- NPO/IVF/serial physical exams
- NGT for persistent nausea and/or vomiting
- With improvement in clinical status (biochemical normalization not necessary to document improvement), patient should go during admission for laparoscopic cholecystectomy with either:
  - Preoperative MRCP
  - Intra-operative fluoroscopic cholangiography
  - Pre-operative endoscopic ultrasound
  - Intra-operative lap ultrasound
- If stones are detected, options include lap transcystic stone extraction, lap CBD exploration, open CBD exploration, or post-operative ERCP

#### Severe Disease Management

- ICU admission, NPO/IVF/NGT
- Patients with signs of cholangitis → antibiotics and emergency ERCP with stone extraction and sphincterotomy
- Depending on progression of clinical status, patient can either be treated as in mild disease arm or will require extensive treatment in ICU ultimately requiring elective laparoscopic cholecystectomy

There is convincing evidence that ERCP is indicated for biliary obstruction or acute cholangitis, but questions remain regarding its utility for uncomplicated gallstone pancreatitis

- Fan et al NEJM
  - Prospective randomized study of 195 patients with acute pancreatitis, 97 received ERCP within 24 hrs, 98 received conservative treatment with selective ERCP if condition deteriorated
  - Significant difference in rate of biliary sepsis (0/97 vs 12/98)
  - No significant difference in local pancreatic complications or systemic complications

- Folsch et al, NEJM
  - Prospective randomized multicenter trial of 238 patients with acute biliary pancreatitis without signs of obstructive jaundice, 126 received ERCP within 72hrs (Group 1), 112 conservative tx (Group 2) with selective ERCP
  - Group 1: 46% found to have stones, papillotomy and extraction performed. Low rate of immediate complications.
  - Group 2: 20% ultimately required ERCP due to jaundice (T Bili > 3), fever, or biliary cramps - 60% of those found to have stones.
  - Significantly higher rate of jaundice in Group 2, but no significant difference in mortality (10% [1] vs. 6% [2]) or complications between the two groups

#### Conclusions

- ERCP in gallstone pancreatitis can reduce biliary sepsis but does not affect outcome of pancreatitis or change mortality
- ERCP can theoretically transform sterile into infected necrosis in the presence of pancreatic ductal disruption and has been associated with increased costs and prolonged hospitalization
- ERCP should be reserved for patients for those with gallstone pancreatitis in whom biliary obstruction is suspected on the basis of hyperbilirubemia and clinical cholangitis

#### References

- Tenner S; Dubner H; Steinberg W. Predicting gallstone pancreatitis with laboratory parameters: a meta-analysis. Am J Gastroenterol 1994 Oct;89(10):1863-6.
- Fan S, Lai E, Mok F, Early treatment of acute biliary pancreatitis by endoscopic papillotomy. NEJM 1993;328:228-32
- Folsch U, Rolf N, Ludtke R. Early ERCP and Papillotomy compared with conservative treatment for acute biliary pancreatitis. NEJM 336, 4237-242
- Baron T, Morgan D. Acute Necrotizing Pancreatitis. NEJM 340: 1412-1417

Alexander Greenstein, M.D.  
August 22, 2005