Assessment & Management of Acute Pancreatitis

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Resident Rounds
Oct 21, 2004
Case Study: Mr. TR

- Mr. TR – 55 y/o male, taxi driver
  presents to ED with 8 hr h/o severe epigastric pain radiating to back
- nausea & vomiting
- "moderate" drinker in past, but rarely drinks now
- No h/o gallstones or post-prandial pain
- Normal BM’s, no hematemesis, no melena

PMHx: Nil
PSHx: Nil
Meds: none
Case Study: Mr TR

- O/E: BP 110/80 / HR 85 / RR 18 / afebrile
- Moderate distress, sitting up
- Resp: Normal
- CVS: Normal
- Abdo: decreased BS, mildly distended, severe LUQ tenderness, no peritonial signs, no Murphy’s
Clinical Presentation

- Severe epigastric/LUQ pain radiating to back or flank
- Tenderness often limited to upper abdo, usually no peritonial signs
- Often related to consumption of large meal or binge drinking
- Nausea, vomiting, anorexia, low fever
- Tachycardia, tachypnea, shock
- Grey-Turner and Cullen signs
Etiology

- Gallstones (40%)
- Alcohol (40%)
- Medications (steroids, thiazide, valproate, azathioprene, estrogen)
- Hyperlipidemia
- Hypercalcemia
- Iatrogenic (ERCP)
- Trauma
- Infection (Mumps, HIV)
- Other
Pathophysiology

- Not fully understood
- Although pathogenesis of inciting events remains unclear, subsequent cascade better understood

- Cascade involves:
  - early activation of pancreatic enzymes
  - local inflammatory response (migration of inflammatory cells and cytokines)
  - systemic inflammatory response (likely mediated by cytokines, pancreatic enzymes, free radicals)
Case Study: Mr. TR
Investigations

- WBC 6.3
- Hgb 150
- Plt 233
- Hct 0.517
- Gluc 9.1
- BUN 4.9
- Creat 98

Abdo series: unremarkable
U/S Pending

- Amylase 1164
- AST 77
- ALT 73
- ALP 61
- Ca 1.99
- LD 164

- ABG:
  pH 7.336 / pCO₂ 37.4 / pO₂ 69.9 / HCO₃ 20.1 / BE -4.5 /
  Lact 4.6
Investigations:

- Serum Amylase
  - elevated 2-12 hrs following onset of symptoms
  - 4x normal
- Serum Calcium
  - Fall as a result of complexing w/ fatty acids
- Serum Lipase
  - More specific for pancreatic disease
  - 2x normal range
- Urinary Amylase
  - >5000 IU/ 24 hrs
- Trypsin Assay
  - Most accurate but not widely available
Imaging

- Chest / Abdominal Films
- Ultrasound
- CT
- ERCP *
Initial Management

- Fluid resuscitation and correction of electrolyte imbalance
- Analgesia
- Bowel rest
- EtOH withdrawal protocol
- Stress ulcer prophylaxis
- NG?
- Antibiotics?
Initial Management

- Mild pancreatitis in 80-90% of cases
- Most resolve in 5-7 days on average
- Gallstone induced pancreatitis may benefit from ERCP and stone removal

- Severe Pancreatitis in remaining 10-20%
  (clinical indicators suggestive of severe disease include peritonitis, shock, respiratory distress)
Case Study: Mr. TR
Day 2

- Overnight, pt ++ oliguric, tachypnic, hypotensive, iv infusing at 300 cc/hr – over 7 L infused already
- Transferred to ICU for intensive monitoring, fluid resuscitation, intubation
- Bloodwork repeated
### Case Study: Mr. TR

#### Day 2

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<td>Hct</td>
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<td>Gluc</td>
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<td>BUN</td>
<td>4.9</td>
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<td>Creat</td>
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**U/S Pending**

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<td>LD</td>
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**ABG:**
- pH 7.286 / pCO₂ 33.6 / pO₂ 80.3 / HCO₃⁻ 16.1 / BE -8.9 / Lact 3.0
Ranson’s Criteria

- **At Admission**
  - Age >55 yrs
  - WBC >16000 /mcL
  - Blood Glucose > 11mM
  - Serum LDH >350 IU/L
  - AST >250 IU/L

- **Initial 48 Hours**
  - Hematocrit decrease >10%
  - BUN elevation >1.8 mM
  - Serum Ca <2mM
  - Arterial PO2 <60 mmHg
  - Base Deficit >4 mEq/L
  - Fluid sequestration >6L

- 0-2 criteria: 0% mortality
- 3-4 criteria: 15%
- 5-6 criteria: 50%
- >6 criteria: 70-90%
Case Study

- Following short stay in ICU Mr. TR made remarkable recovery. Pending D/C on Day 6, pt. c/o mild “stitch” in LUQ and spiked fever.
- CT abdo:
  - “acute pancreatitis…with diffuse pancreatic ascites. No discrete drainable collections”
- Started on IV imipenem
Case Study

- Fluctuant course in hospital w/ necrotic pancreas and massive fluid collections in paracolic gutters and pancreatic bed
- ERCP demonstrates complete disruption of pancreatic duct middle third
- Despite this, pt remained stable – no pain, tolerating diet, occasional low grade temp, stable WBC
Complications

- Acute Pancreatic Fluid Collection
- Pancreatic Necrosis
  - Infected vs. sterile
- Pancreatic Pseudocyst
- Pancreatic Abscess
Acute Pancreatic Fluid Collections

- Retroperitoneal collections of fluid in the early stages of pancreatitis
- Will usually resolve spontaneously and rarely require intervention
- Should avoid drainage due to risk of introducing infection
- Infected collections are amicable to percutaneous drainage and antibiotics (no necrotic tissue to act as a nidus of infection)
Pancreatic Fluid Collections
Pancreatic Necrosis

- areas of nonviable pancreatic or peripancreatic tissue that may be either sterile or infected
- necrotic tissue has a putty-like or paste-like consistency. Some necrotic regions may evolve into pseudocysts, whereas others may be replaced by fibrous tissue
- Infection usually within initial 3-4 weeks
Pancreatic Necrosis
Pancreatic Necrosis

- **Sterile**
  - Management controversial
  - Operative debridement
    - ↓morbidity, quick recovery
  - Careful monitoring
    - Eventual recovery while avoiding potentially hazardous operation

- **Infected**
  - *Conventional Approach*
    - Débridement with reoperation
    - Débridement with open or closed packing and reoperation
    - Débridement with continuous lavage
  - *Unconventional Approach*
    - Antibiotics alone
    - Antibiotics with percutaneous drainage
    - Antibiotics with endoscopic drainage
Pancreatic Pseudocyst

- collections of pancreatic juice, usually rich in digestive enzymes, that are enclosed by a nonepithelialized wall composed of fibrous and granulation tissue
- not present before 4 to 6 weeks
- When pus is present, the infected pseudocyst is referred to as a \textit{pancreatic abscess}
Pancreatic Pseudocyst
Pancreatic Pseudocyst

- Intervention only if increasing in size or symptomatic
- >6cm more likely to be symptomatic
- Options:
  - Excision (eg. Distal pancreatectomy)
  - Percutaneous drainage (risk of infection)
  - Internal drainage
    - Transpapillary drainage (ERCP)
    - Cyst-gastrostomy
    - Cyst-duodenostomy