Acute Pancreatitis

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Penn Medicine

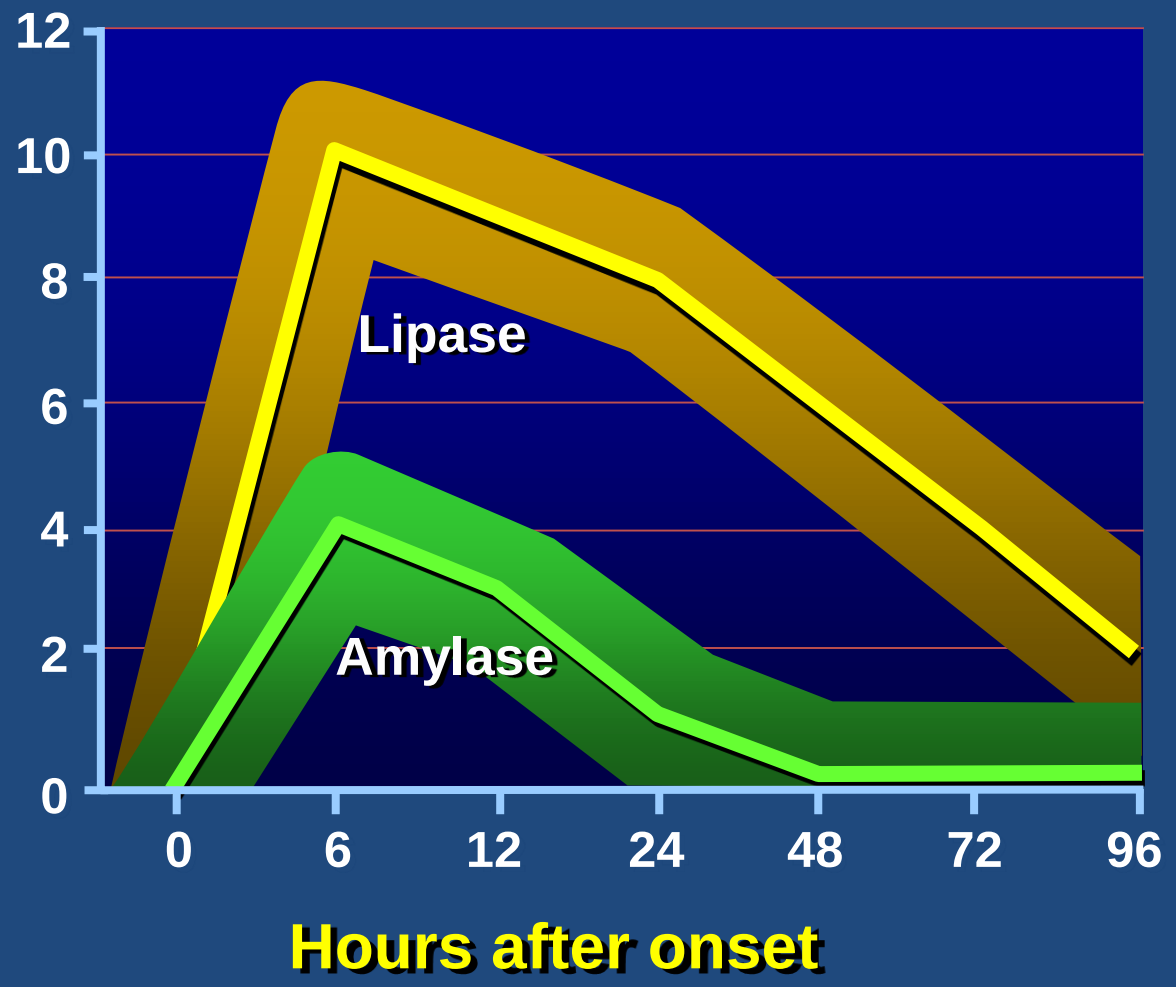
Outline

- Def
- Clinical presentation/Differential
- Epidemiol
- Pathophys
- Causes
- Complications
- Radiology
- Scoring systems/prediction
- Management: fluids, antibiotics, nutrition, ERCP
- Long term consequences (CP, DM, cysts, bleeds)

Acute Pancreatitis

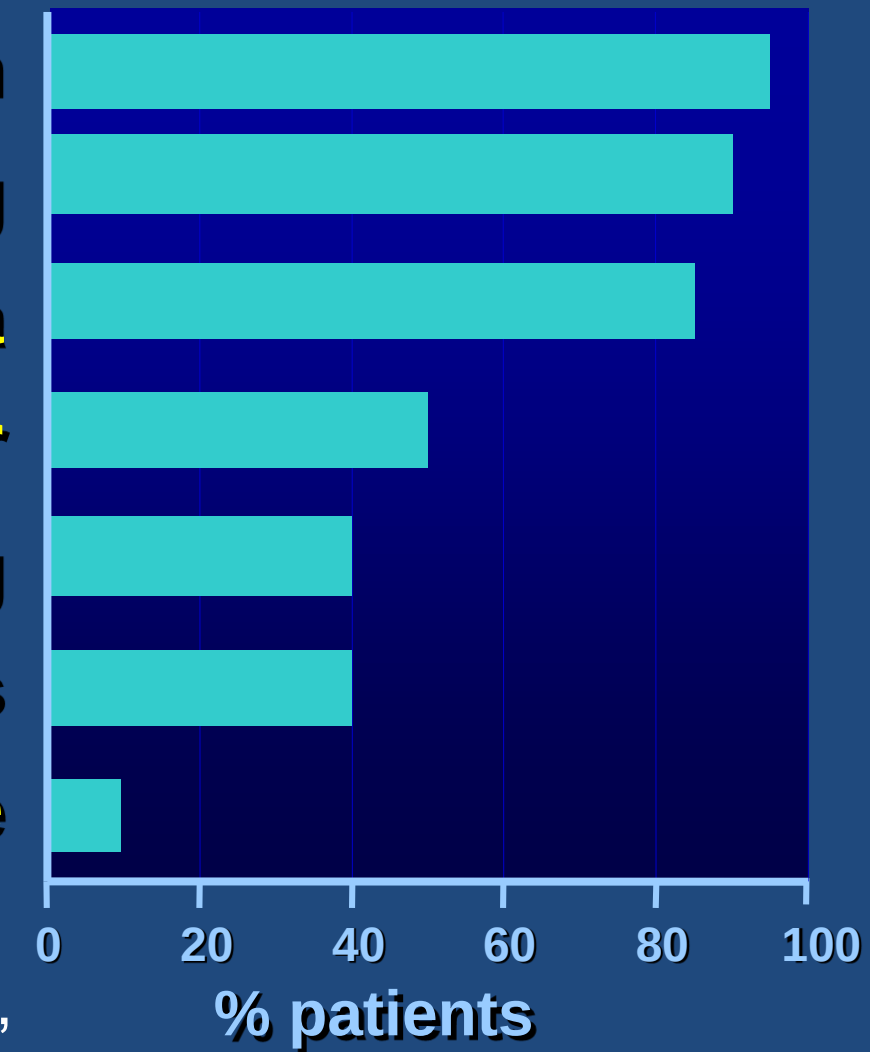
- Inflammation of the pancreas and associated adjacent organs without evidence of chronic pancreatitis
- Atlanta Symposium in 1992 defined acute pancreatitis clinically as 2 of 3 of the following
  - Typical pancreatic type pain
  - Radiographic findings of acute pancreatitis
  - Elevations in blood chemistries (typically amylase and/or lipase >3x ULN)

Acute Pancreatitis: Time course of enzyme elevations



Amylase half life 10 hrs

Presenting features



Syncope! Rare

Painless:post op, legionaire's, DM, perit dialys

Pain, Oh the pain

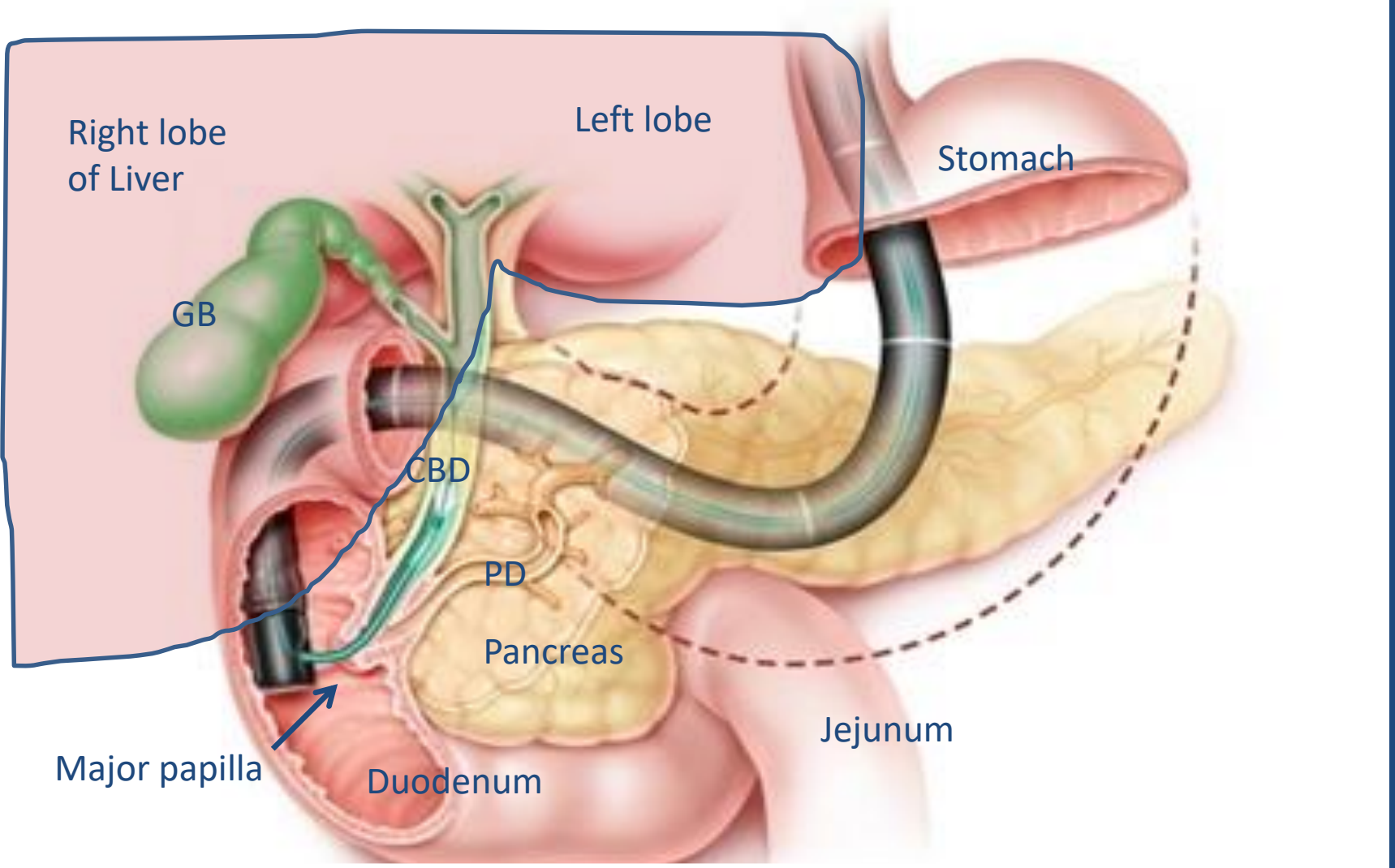
- “Worse than childbirth” “Worse than being shot”
- Starts fast within 10-20min reaches peak
  - Third fastest pain onset in GI after perf and SMA thrombosis
- Lasts days (if no underlying chronic damage)
  - Longer than biliary colic which is hours
- Radiate to back in 50%
- Almost always causes ER visit/admission

Etiologies of Acute Pancreatitis

- Biliary (gallstones) ***
- Alcohol****
- Triglycerides***
- pERCP,* post surgical
- Drugs
  - (except byetta and L-asparagenase and trigs **)
- Tumors/obstruction
- Trauma**
- Ischemia/embolic***
- Infection (except mumps **)
- Hypercalcemia (hypPTH)
- Autoimmune/Sprue
- Hereditary
- Controversial (divisum/SOD)
- Scorpions ***
- Chemical: insecticide/MeOH
- Idiopathic: 30%!!

Number of *'s denotes tendency to be severe

Biliary anatomy



Biliary

- Gallstones or sludge, Microcrystals?
- Most common etiology in world. Still 35% in US.
- More in women
- Usually small ones that don't obstruct cystic duct or most of CBD until right at major pap
- Usually pass on own, but don't be complacent!
  - Can be Necrotizing!!
- Biliary duct dil/LFT can occur late! (insensitive!)
- If fever, bili over 2, SIRS, (ie cholangitis) call adv endo immediately.
- ALT 3X ULN (>150) 50% sens and 90% specif.
- First ALT then bili then ductal dilation.
- ALT/AST can be 1000!
- NOTE MUST BE ON CHART FROM SURGERY BEFORE D/C !

Biliary: who has extant CBD stone?

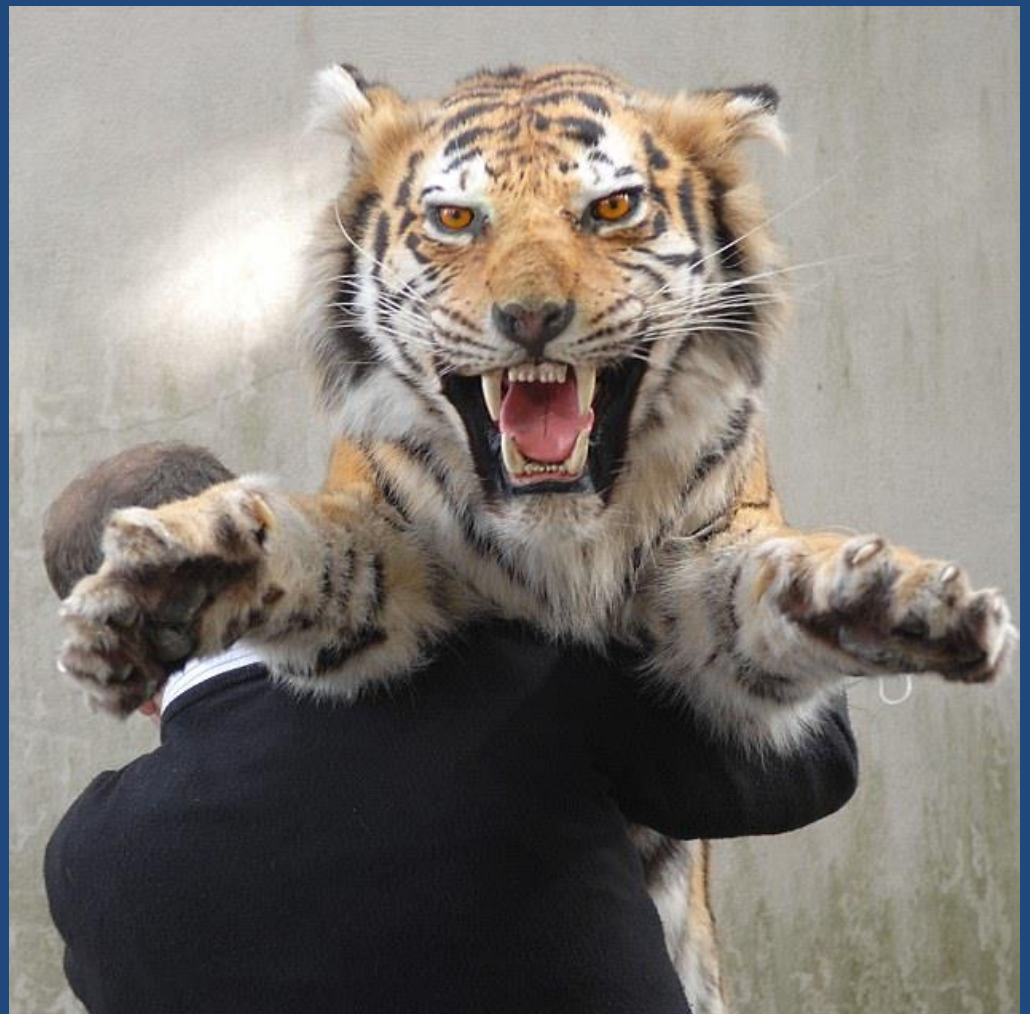
- Cholangitis—call even at 2am if look unwell, septic
- TBili over 3, esp if over 5
- LFT not improve, esp if pt still has pain
- Pt looks unwell
- High (ERCP), moderate (MRCP), low risk (watch)
- Very personalized decision. Depends on local MRCP quality, surgical expertice in intraop cholangiogram, etc
- Call even on weekend
- MRCP can have false pos>>>false neg

Alcohol

- TAKE A CAREFUL HISTORY
- Often after pt stops drinking (CCK is upregul and pts start to eat more fat/protein).
- “The night of the day after” a binge
- Typically a lot: >50g/day for years
- More in men; lipase 2X amylase?
- 1st or 2nd most common in US (31-40%)
- Mitochondrial toxin, lysosome instability
- Reactive oxygen species, proinflamm
- Increased lysosome and enzyme production
- Decrease panc blood flow, precipitate panc proteins
- Why only 10% of alcoholics get panc’tis? SPINK?
- Often have CP

Interstitial/edematous pancreatitis

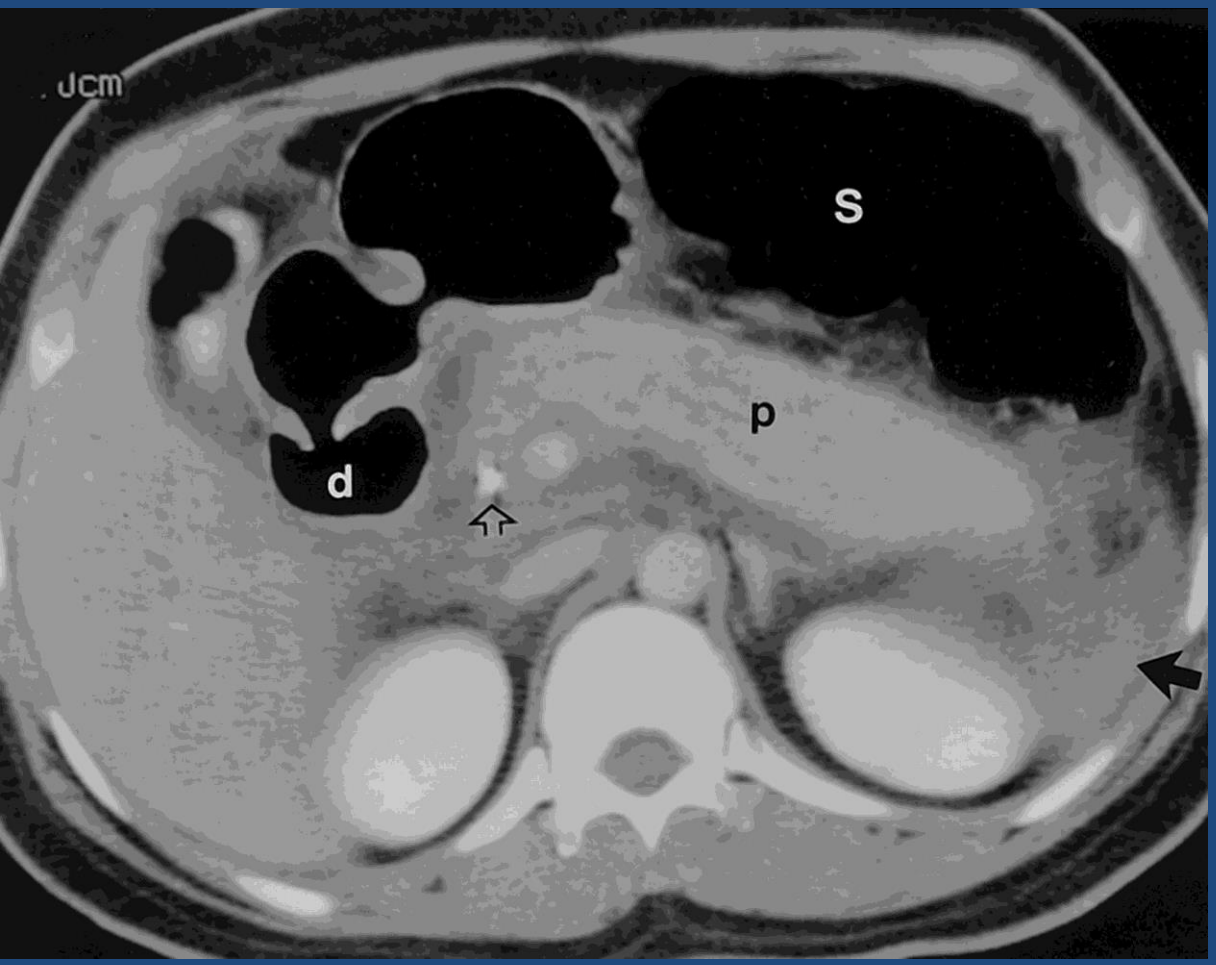
Necrotizing Pancreatitis



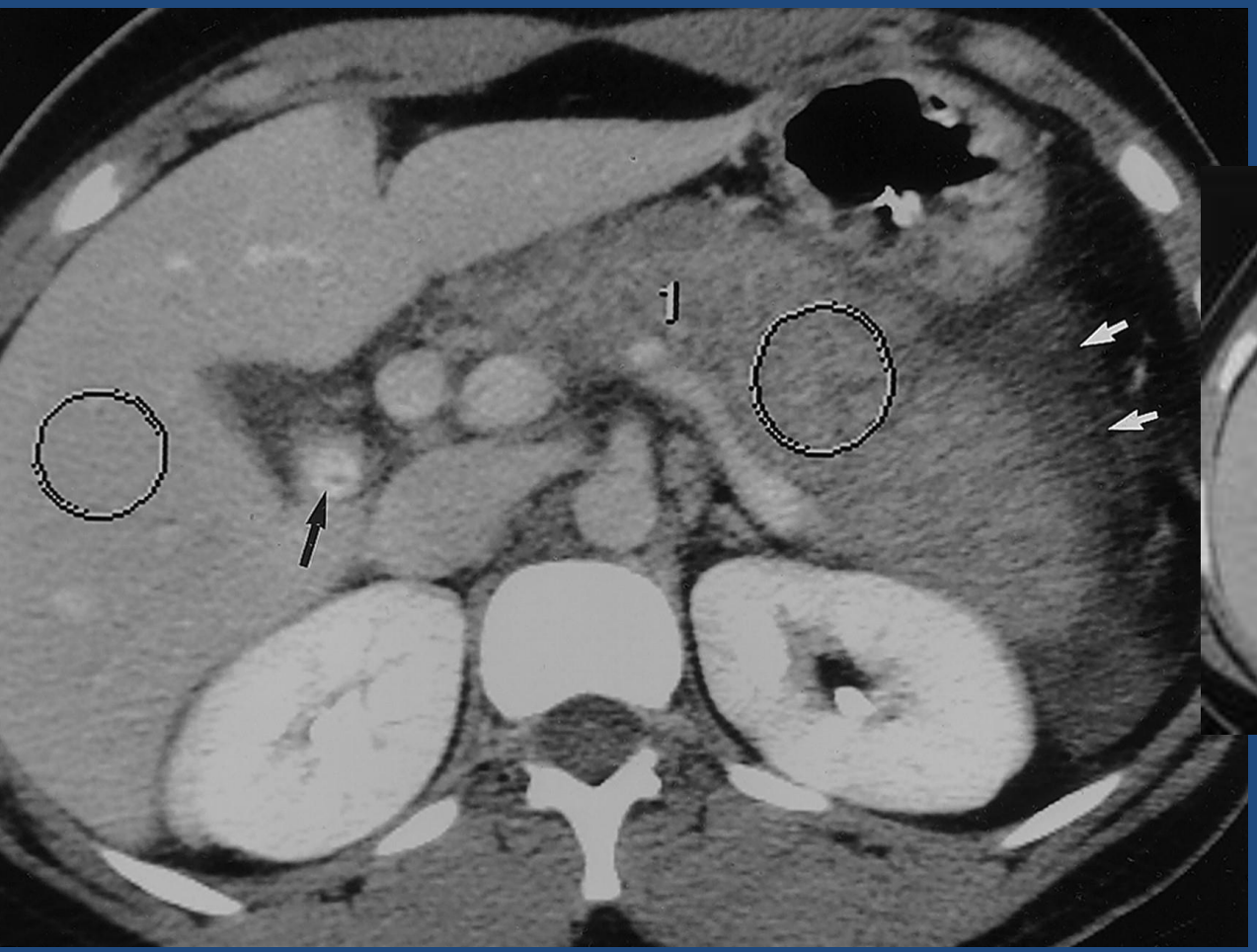
Mortality

- Overall 2-5% and decreasing slightly
- Interstitial/mild pancreatitis (80% of all cases)
  - ≤1% mortality
- Necrotizing/severe pancreatitis (20% of all cases)
  - 20% mortality, long ICU stays (1-3 months)
- Infected necrotizing pancreatitis (occurs late)
  - 50% mortality

Interstitial pancreatitis



Interstitial pancreatitis



Necrosis

How pts die with AP?—Two Peaks

- Early within 1-2 weeks and often within 72 hours: multisystem organ failure (kidneys, lungs with ARDS) (can't be ventillated/oxygenated even on vent), DIC, hypocalcemia, shock/hypotension, abd compartment synd, aspiration, cholangitis, acidosis, hemorrhagic pancreatitis, intest ischemia (clot in SV->SMV))
- Late: pancreatic abscess/infected necrosis, usually by 2 weeks, secondary biliary obstruction, hypoalbuminemia, Hospital acquired (VRE, MRSA, line infect, aspirations), PE, gastric variceal bleeding, gut failure, neg nitrogen balance.

Hemosuccus Pancreaticus

Clues to send to ICU

- Tachypnea
- Oliguria <50ml/hr
- Hypotension/orthostasis
- Tachycardia >130
- Tense, distended abd
- Grey-Turner's/Cullen's
- Pallor, cold extremities
- Jaundice esp if febrile
- Azotemia, hypoalbumin
- Age> 55, high fluid req'm
- First attack
- Mental status changes
- Uncontrol hyperglyc/hypo
- Cardiac ectopy (recurrent runs of NSVT/PVCs)
- QTc>440msec
- Obesity BMI>30, "apple"
- Baseline dec card/pulm fn
  - Diastolic dysf
- Hemoconcentration
- WBC>15, bands/myelos
- Pleural effusion

Clinical indices of severity

- RANSON
- APACHE
- ATLANTA
- BISAP
- Glasgow
- Delta HCT and/or Delta BUN

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Ranson

At presentation

- Age >55
- White blood cell count >16
- Blood glucose >200 mg/dL
- LDH >350 U/L
- AST >250 U/L

At 48 hours

- Hematocrit Fall by ≥10%
- BUN Increase by ≥5 mg/dL despite fluids
- Serum calcium <8 mg/dL
- pO2 <60 mmHg
- Base deficit >4 MEq/L
- Fluid sequestation >6 L

1-2 criteria - > <1% mortal
3-5 cirteria - > 15% mortal
6-8 criteria- > 60% mortal
9-11 -> >75% mortal

APACHE II

- Temp high or low
- MAP high or low
- HR high or low
  - (HR 60 gets 2pts!)
- Na high or low
- K high or low
- Creat elev
- Age over 44
- APACHE-O
  - BMI>25 1 pt
  - BMI>30 2pts

- WBC high or low
- Glasgow coma (low)
- pH or HCo3
  - High or low
- PaO2
- Nonsurgical and emergency surgery
  - More points

Score <8 Mortal <4%
Score >8 8-18%

ATLANTA (1992)

- Mild vs severe (necrosis or organ failure)
- APACHE≥8 or RANSON≥3
- Organ failure
- Systolic blood pressure *<90 mmHg*
- Pulmonary insufficiency *PaO2 ≤ 60 mmHg*
- Renal failure Creatinine ≥2 mg/dl after rehydration
- Gastrointestinal bleeding 500 ml in 24 h
- DIC: Platelets ≤100 *fibrinogen <1·0 g/l and fibrin-split products >80 µg/l*
- Calcium ≤7·5 mg/dl

ATLANTA REVISED (2008)

- Early severity->organs fail
- Late severity->Structural (necrosis), esp infect
- PERSISTANT ORGAN FAILURE (>48 hrs)
- NEW DEFs of Radiographic/structural features of severity

ATLANTA

1992

- Interstitial vs necrotic
- Pseudocyst vs abscess

Revised, 2008

- Interstitial edematous panc
- Sterile necrosis
- Infected necrosis

- Acute
  - Necrosis vs fluid, sterile vs infected
- Chronic
  - Pseudocyst vs walled off necrosis
  - Sterile vs infected

BISAP

- SIRS
  - T >38.5°C or <35.0°C, HR>90,
  - RR >20 or $PaCO_2$ <32 mm Hg
  - WBC >12,000, <4000 or >10 percent immature (band) forms
- BUN>25
- Age>60
- Pleural effusion
- Altered mental status (glasgow CS < 15)

0-2 pts: <2% mortal
3-5pts: 22% mortal

Glasgow

- Age >55
- WBC >15
- LDH>600
- Glucose >180
- Albumin <3.2
- Calcium <8
- PaO2<60
- BUN>45

At admission and at 48hr
Score 0 to 2: 2% mortality
Score 3 to 4: 15% mortality
Score 5 to 6: 40% mortality
Score 7 to 8: 100% mortality

investigations

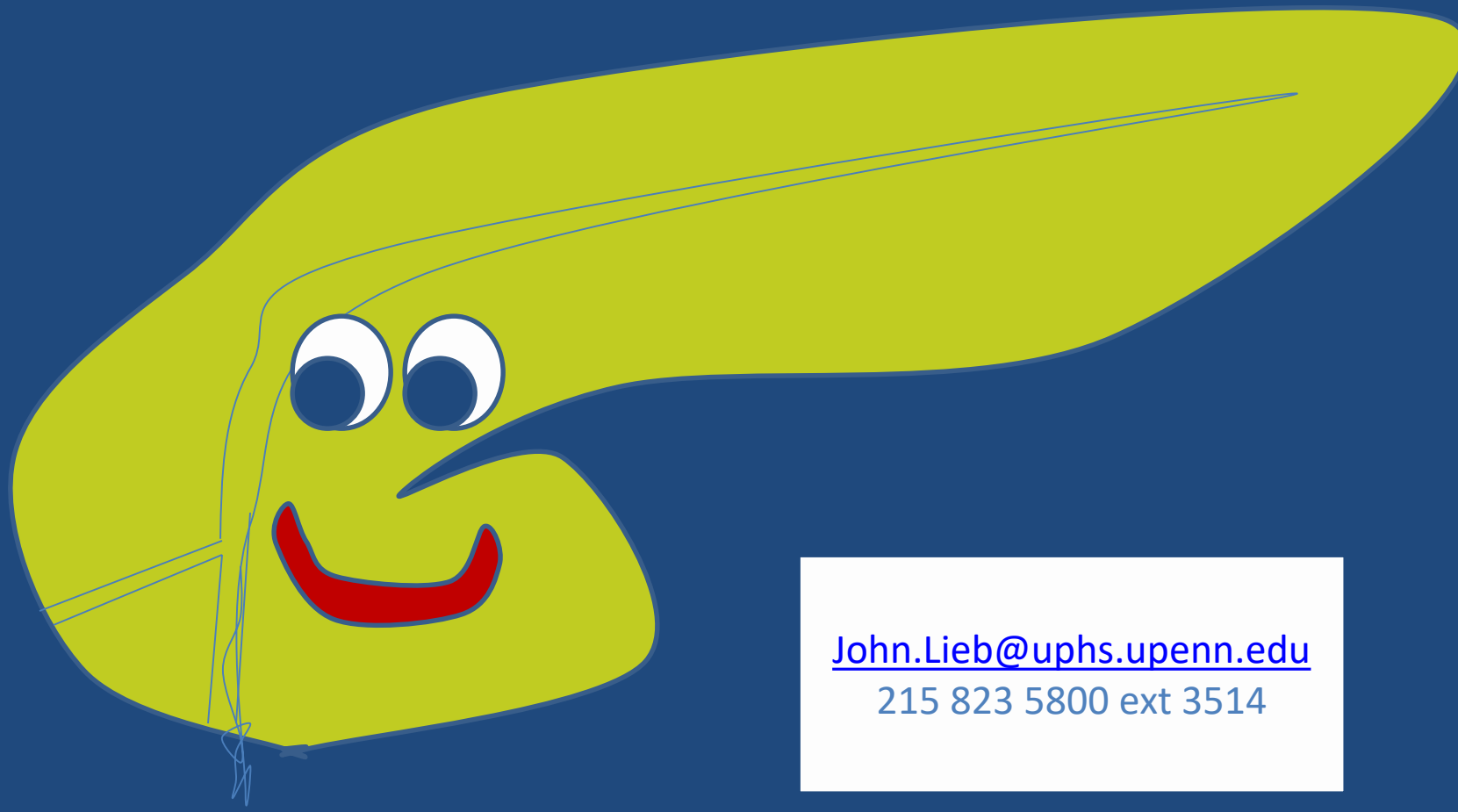
- Cbc
- Serum amylase
- Serum lipase
- Lfts
- Rfts
- Ultra sound
- Ct scan

Management

- Ng tube
- Urinary cathether
- i.v fluids
- i.v antibiotic
- i.v pain killer
- Intake/out put record

When to call a surgeon?

- Pt unstable.
- Infected necrosis proven or suspected. They may not intervene until later, but let them know
- Abdominal compartment syndrome (ck foley pres)
- Pt with multiple poor prognostic signs, age, WBC, oliguria, SIRS
- ELECTIVELY WITH ANYONE WITH STRONG SUSPICION FOR GALLSTONE ETIOLOGY WITH GB STILL IN SITU. MUST HAVE CONSULT ON CHART AND F/U ARRANGED—HIGH RECURRENCE RATE W/O CHOLE
- Pt in ICU, can't eat/tolerate enteral, not improving



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