Pancreatitis

Hamad Al-Qahtani, MBBS, MD, CABS, FRCS

Professor of Surgery & Consultant Hepatobiliary Surgeon

College of Medicine

King Saud University

Acute Pancreatitis

Definition

Acute inflammation of pancreas, ranging from mild to severe form (edema to necrosis).

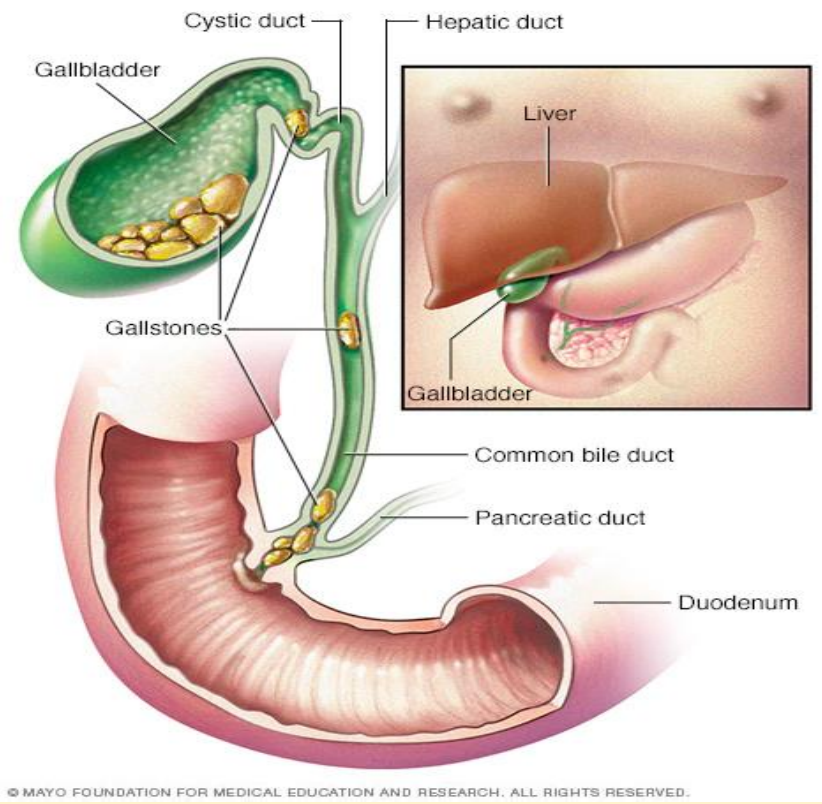
Etiology

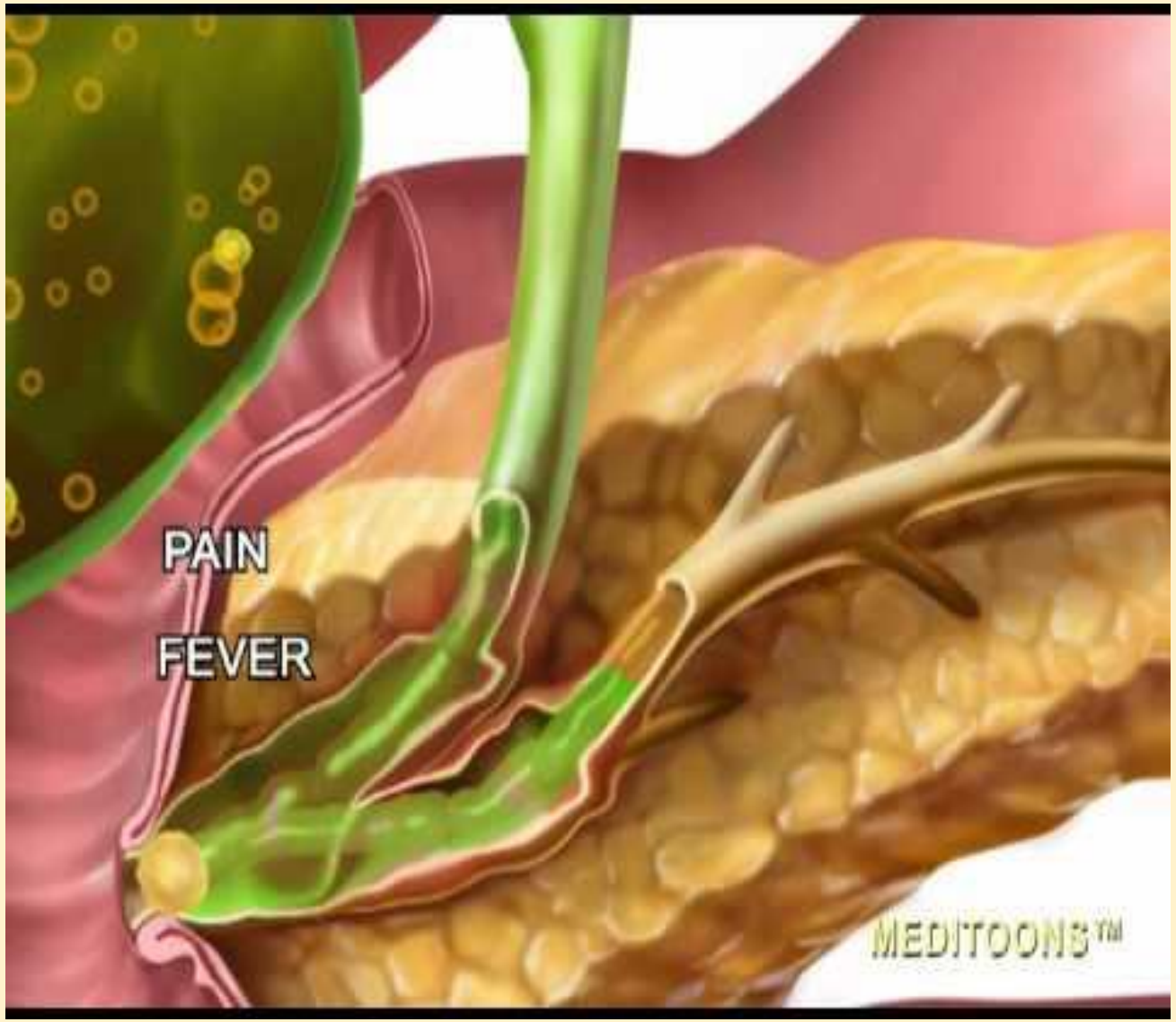
- Gallstones
- Alcohol
- Trauma (Blunt, penetrating, surgical, endoscopic)
- Hereditary pancreatitis (PRSS-1 , SPINK-1)
- Pancreatic duct obstruction (Neoplasms , congenital)
- Hyperlipidemia
- Drugs, lipid-based solutions

Etiology

- Hypercalcemia
- Infection
- Splanchnic hypoperfusion
- Atheroembolic conditions
- Smoking
- Scorpion's venom
- Antiacetylcholin-esterase
- Idiopathic (microlithiasis)

Gallstone acute pancreatitis





Pathophysiology

• Precipitating Initial Events

Premature intrapancreatic activation of pancreatic enzymes resulting in autodigestion of the organ. This occur due to co-localization of the lysosomes (contains cathespin B) with zymogenes.

• Intrapancreatic Events

Acinar cell injury with attraction of neutrophils, release of superoxides and proteolytic enzymes (cathespin, elastase, collagenase) which results in further pancreatic injury.

• Systemic Events

Release of inflammatory mediators (interleukins, TNF) may result in multiorgan dysfunction syndrome or failure.

Diagnosis

- Clinical features

1. Symptoms
2. Signs

- Differential diagnosis
- Biochemical confirmation

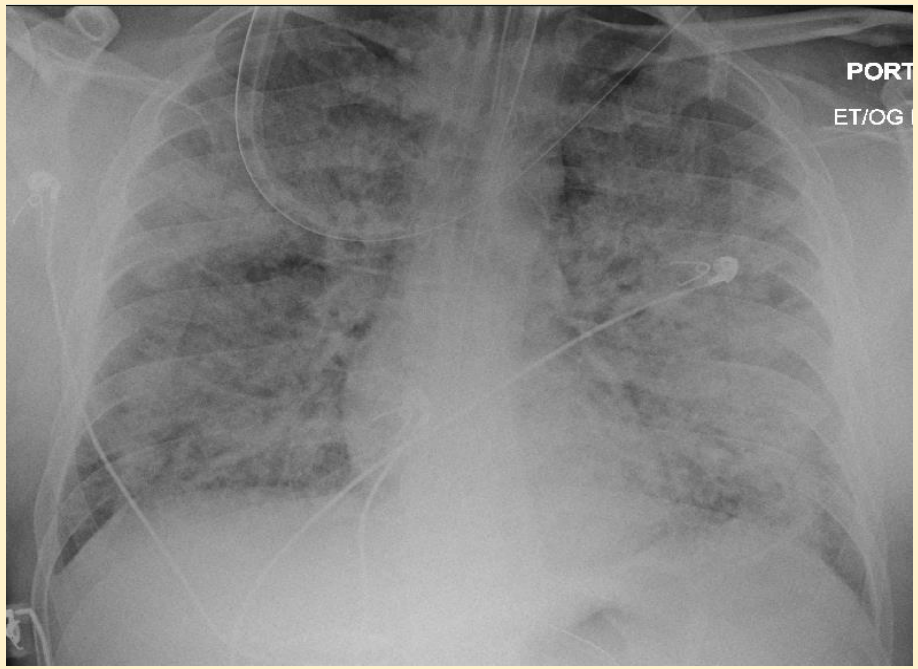
Investigations

Laboratory

- CBC
- U/E
- LFT
- Amylase (pancreatic isoenzyme) / Lipase
- Urinary level of pancreatic enzymes
- Serum Glucose
- Serum Calcium, LDH, Coagulation Profile
- Lipid Profile
- ABG
- C-Reactive Protein

Imaging

- Chest X-Ray
- Abdominal X-Ray
- Ultrasound Abdomen
- CT scan Abdomen
- MRI Abdomen (solid contents within collection)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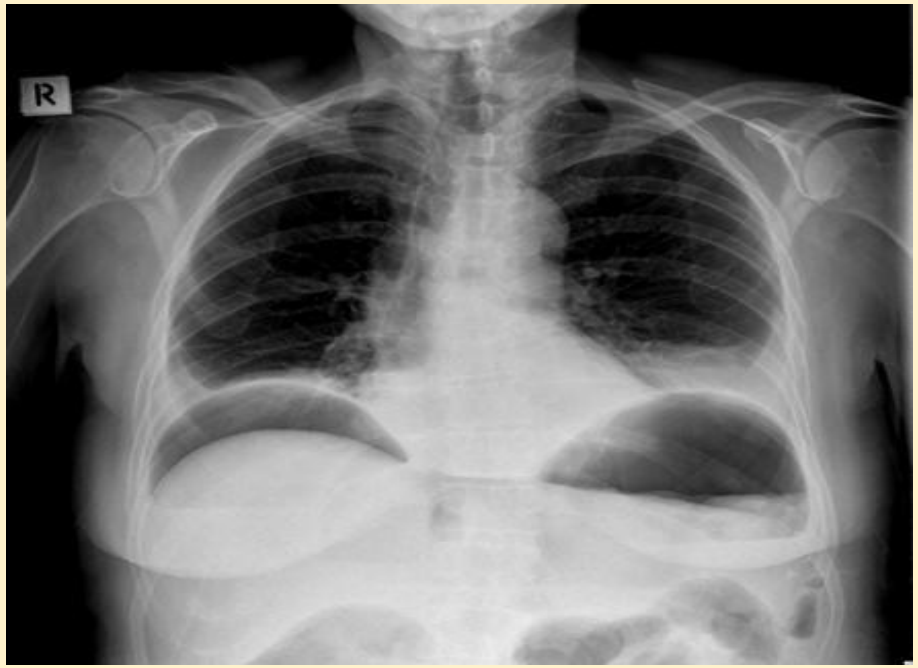
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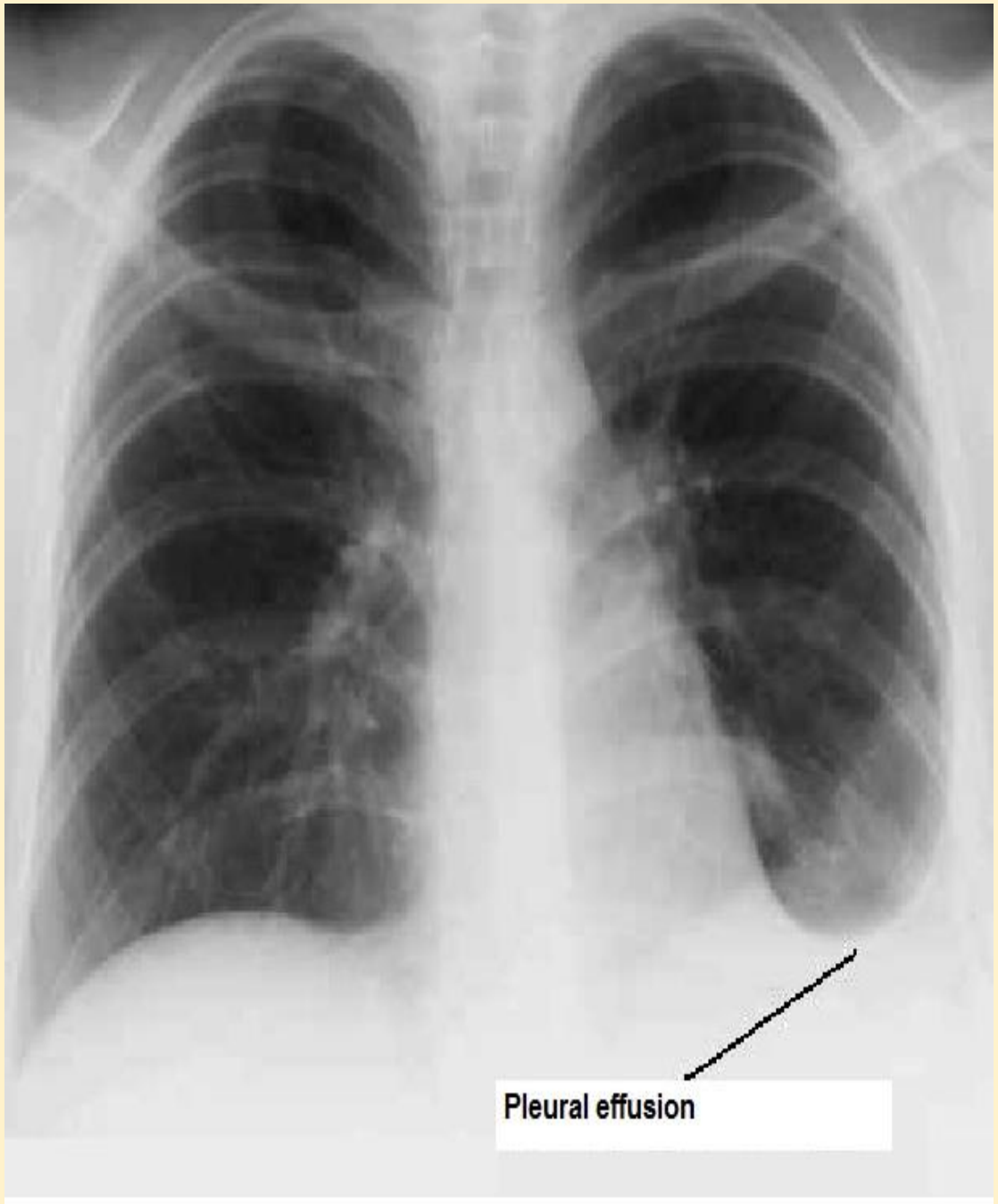
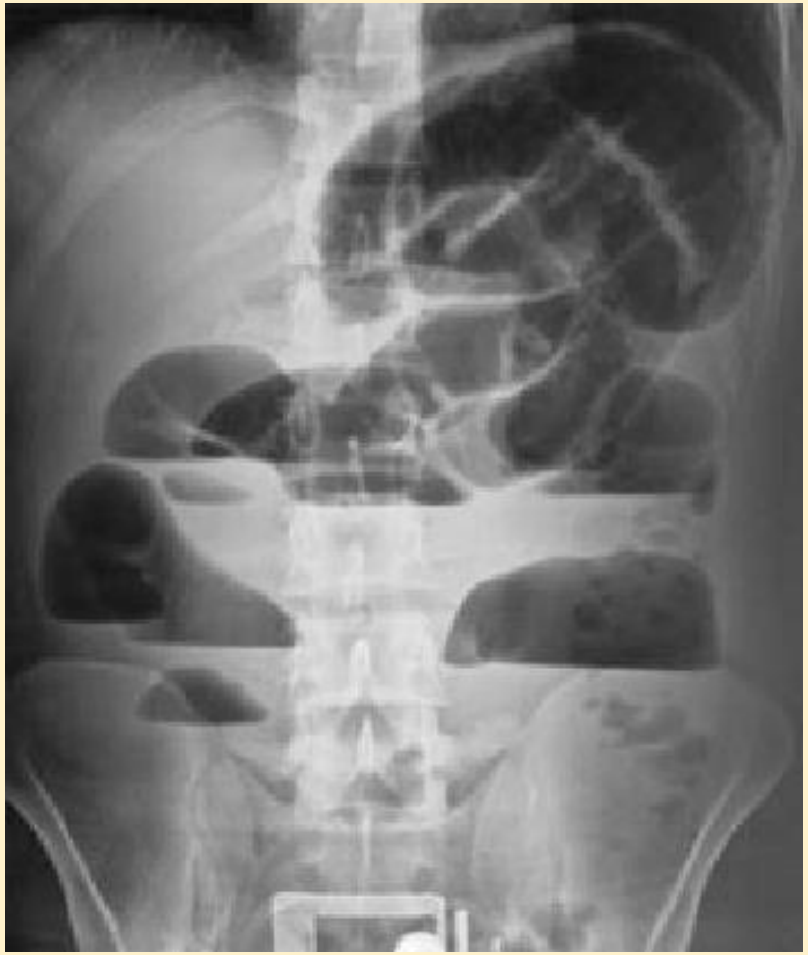
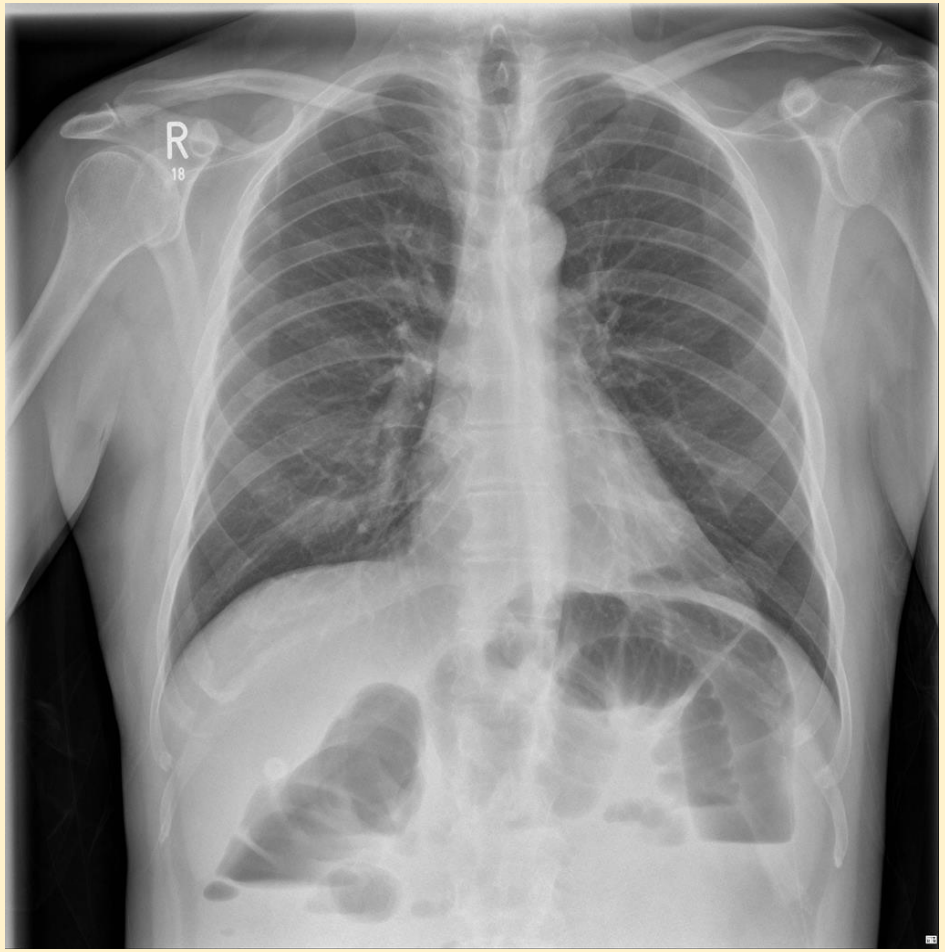
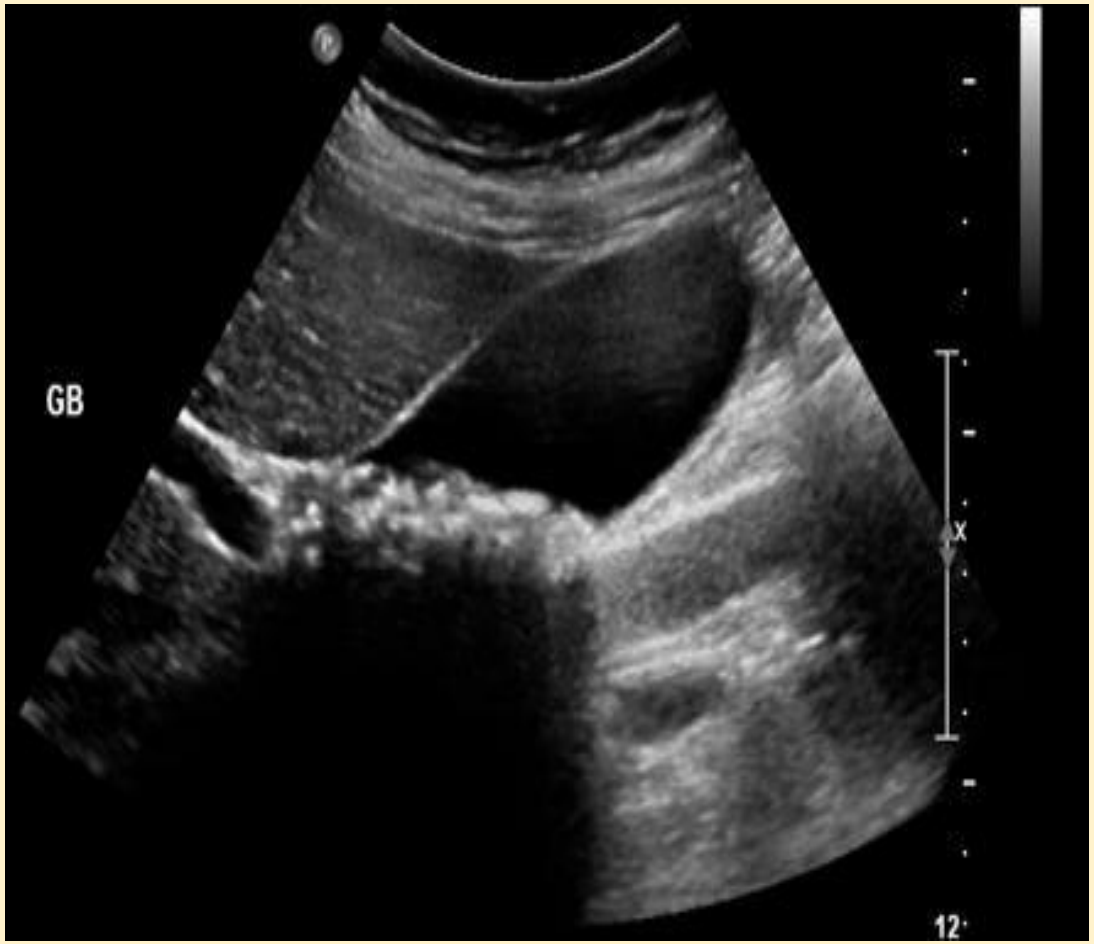

Pleural effusion

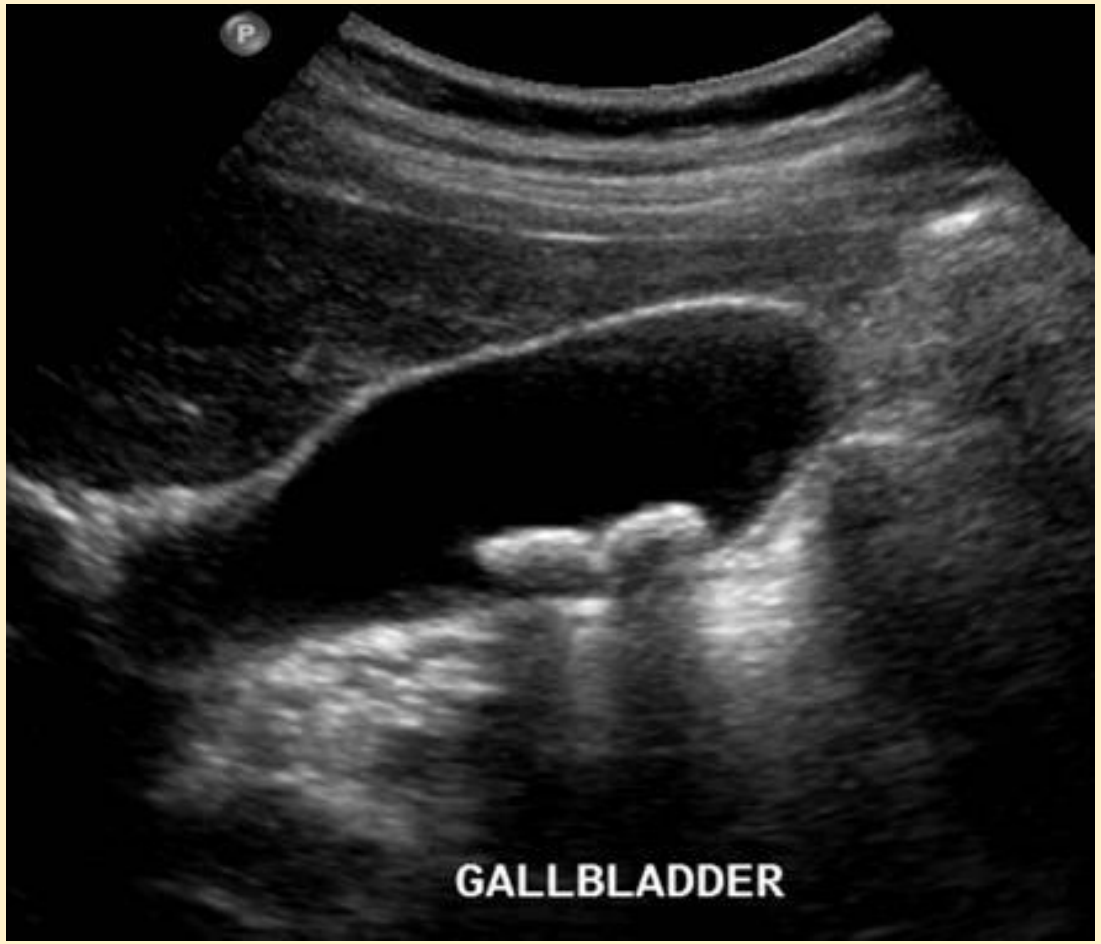
Multiple air fluid levels, Sentinel loop
Colon cut-off sign

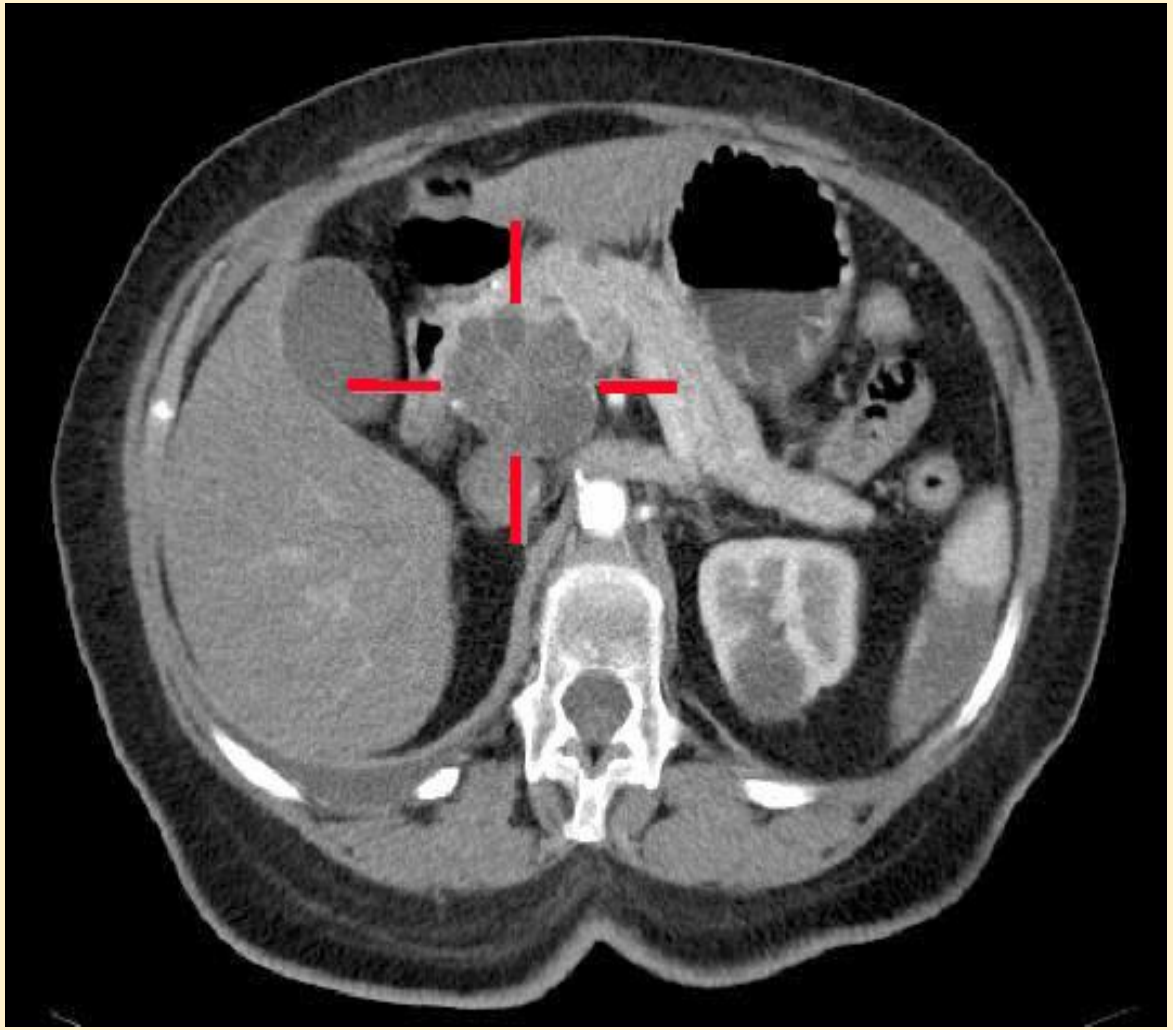


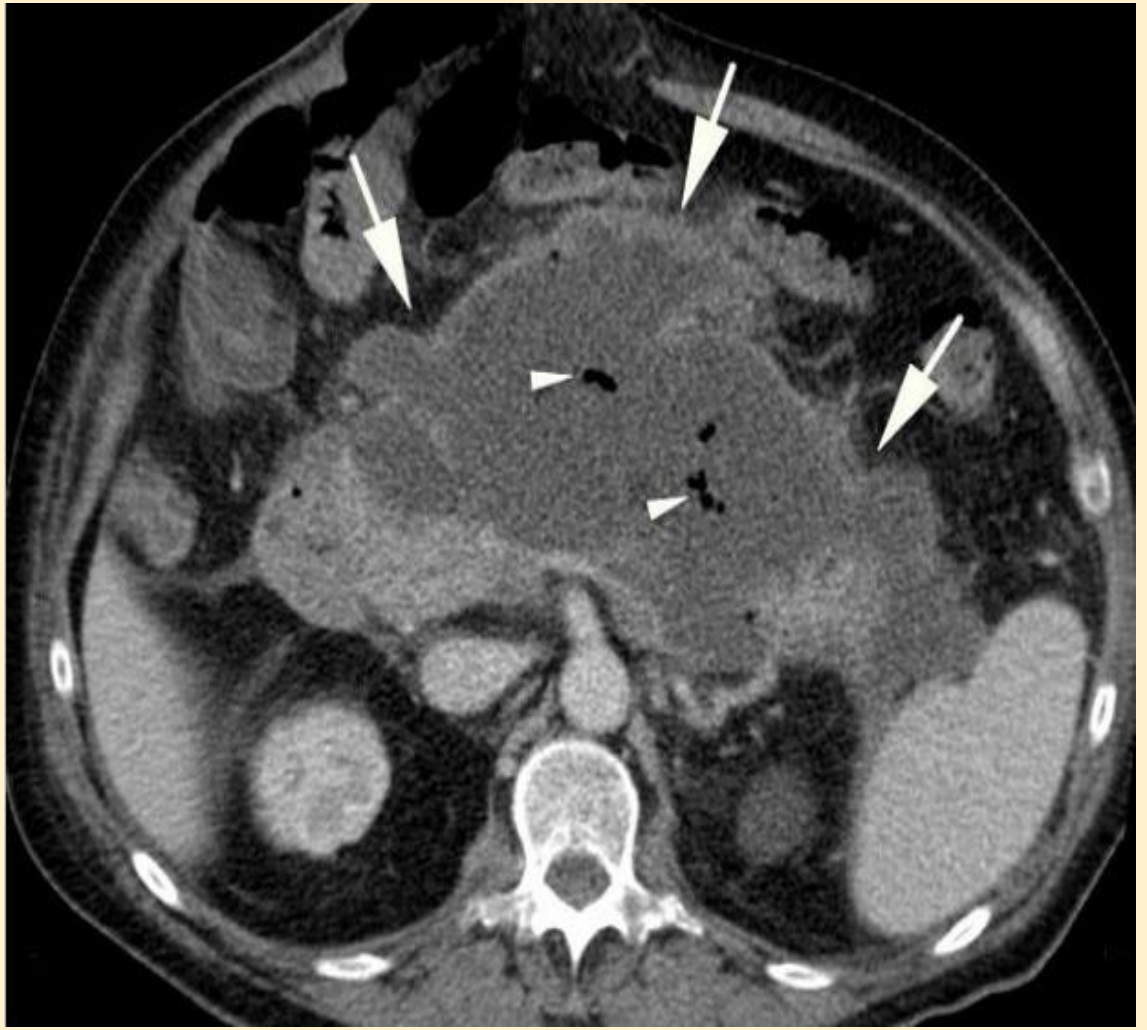


Ultrasound: Gallstones



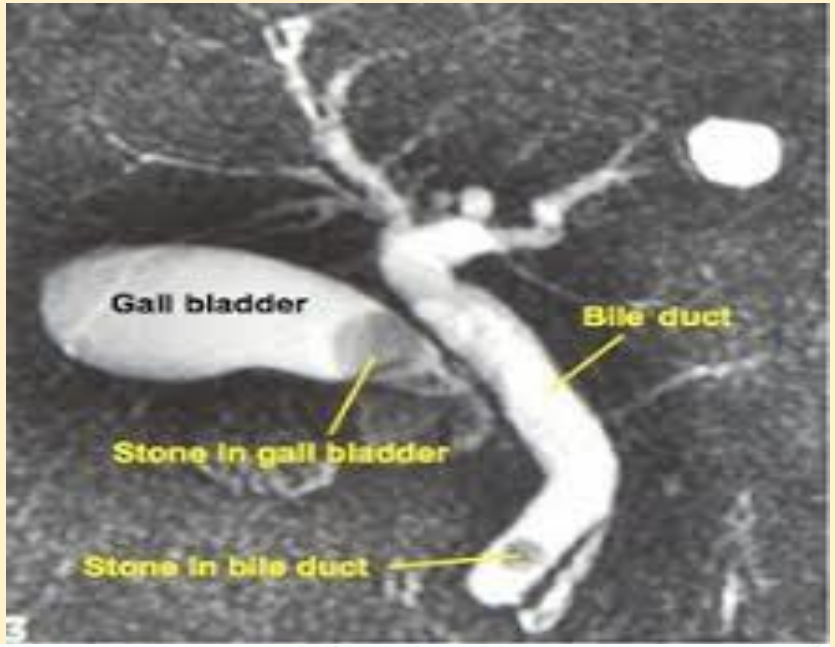


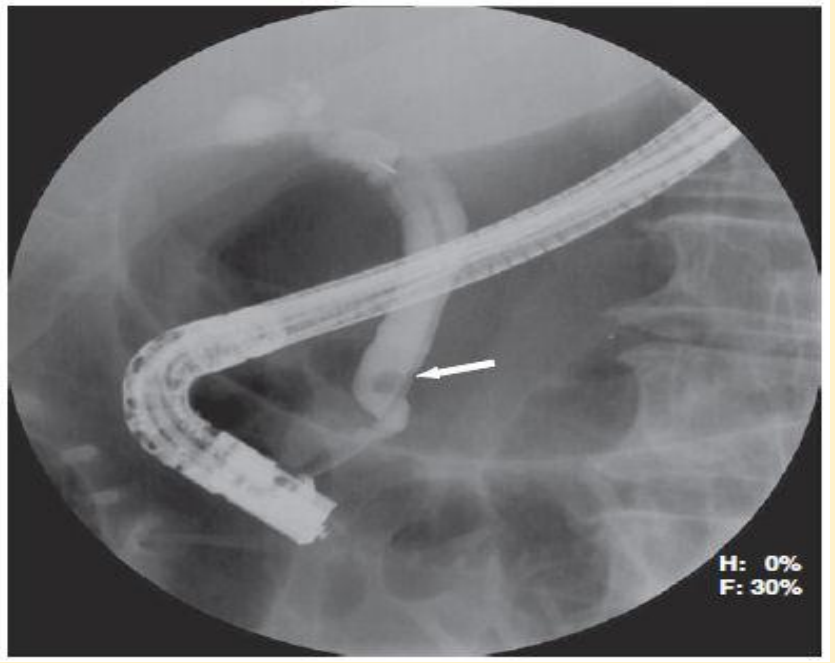




ERCP / MRCP / EUS

- Indications
- Precautions
- Complications


Gall bladder
Bile duct
Stone in gall bladder
Stone in bile duct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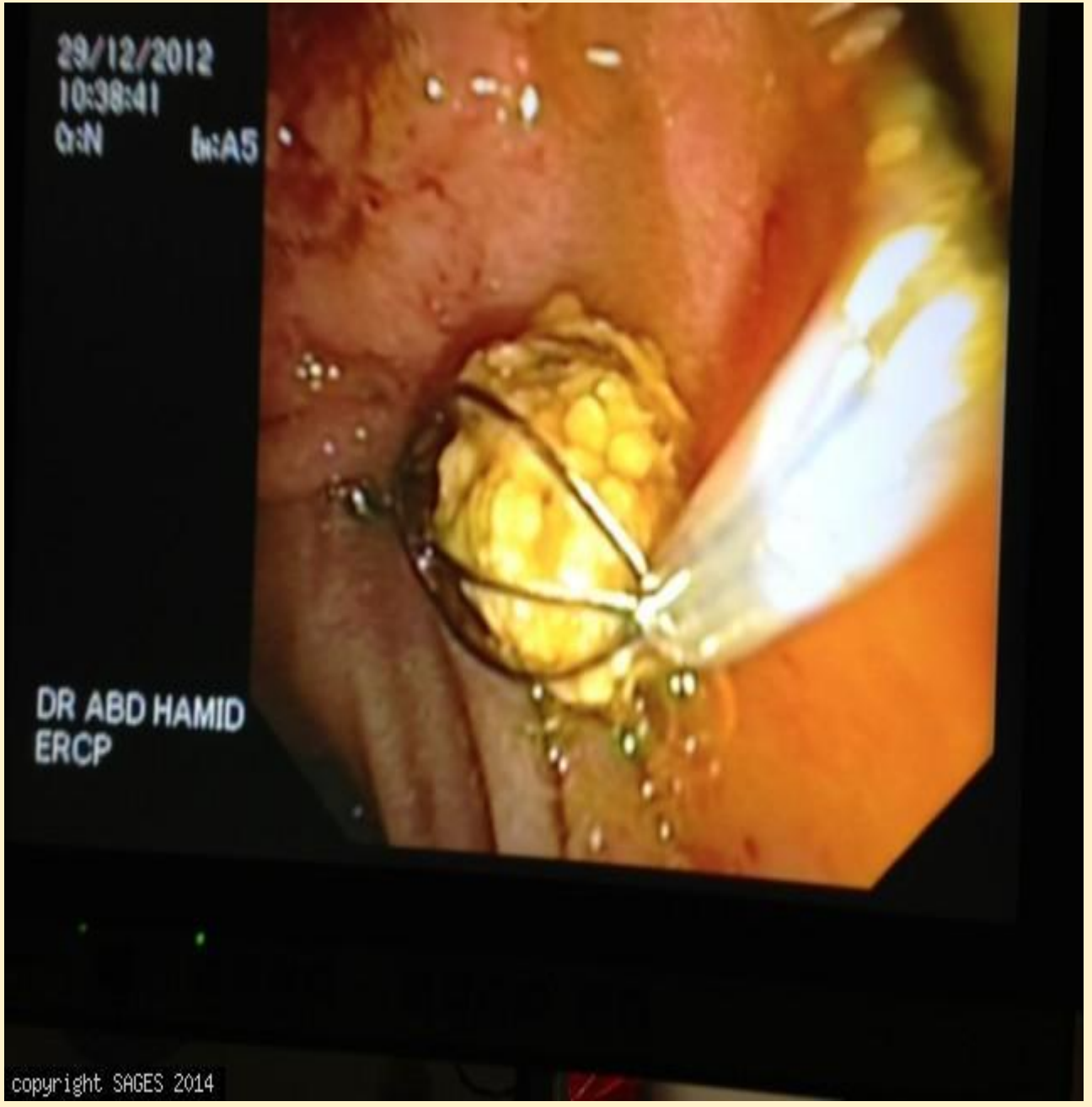
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ERCP
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Management

Essential requirement

1. Accurate diagnosis

2. Appropriate triage

3. High-quality supportive care

4. Monitoring for and treatment of complications

Management

- ABC
- NPO
- Two Large IV Cannula, NGT, FC
- Fluid Infusion (Ringer's lactate)
- Central line
- Pulse oximeter with oxygen supplements
- Analgesia (intravenous)

1. Mild pain: NSAID (e.g. metamizole)
2. Severe pain: narcotics are preferred (e.g. pentazocine , meperideine , but not morphine ?)

Assessment of severity

1. Stratify the risk and prognosis

2. Triage of the patient (tertiary hospital or ICU)

3. Decision regarding fluid therapy, ERCP and other issues

Management

Ranson's score

Fewer than three positive criteria predict mild, uncomplicated disease, whereas more than six positive criteria predict severe disease with a mortality risk of 50%.

At admission	During the initial 48 h
Age ›70 y	Hematocrit fall ›10 points
WBC ›18,000/mm3	BUN elevation ›2 mg/dL
Blood glucose ›220 mg/dL	Serum calcium ‹8 mg/dL
Serum LDH ›400 IU/L	Base deficit ›5 mEq/L
Serum AST ›250 U/dL	Estimated fluid sequestration ›4 L

Assessment of severity

- **Modified Glasgow score** (›2)
- **APACHE II** (›8)
- **BISAP** (BUN [›25mg/dl], GCS [‹15], age [.60y], presence of SIRS or pleural effusion). Simple and it can be performed within 24 hours.
- **C-Reactive protein** (› 150 mg/dl)
- **Harmless score** (absence of epigastric tenderness, normal hematocrit and creatinine)
- **Balthazar scoring system** (CT Severity Index-CTSI)

Patients with elevated BUN or creatinine and/or persistent SIRS must be monitored over the first 2-3 days, because these patients at risk of developing severe acute pancreatitis.

Sequential organ failure assessment (SOFA) score in acute pancreatitis

Multiple organ failure is defined as two or more organs registering two or more points on these scoring systems. Monitoring organ failure over time and in response to treatment is important in the care and timing of intervention in these patients.

	0	1	2	3	4
Respiration (PaO2FIO2) (mmHg)	>400	≤400	≤300	≤200 with respiratory support	≤100 with respiratory support
Coagulation Platelets (xl01 per µL)	>150	≤150	≤100	≤50	≤20
Liver Bilirubin (µmol/L)	<20	20–32	33–101	102–204	>204
Cardiovascular Hypotension	No hypotension	MAP <70 mmHg	Dopamine ≤5 or dobutamine (any dose)	Dopamine >5 or epi ≤0.1a or norepi ≤0.1	Dopamine >15 or epi >0.1a or norepi >0.1
Central nervous system Glasgow coma score	15	13–14	10–12	6–9	<6
Kidney Creatinine (µmol/L) or urine output	<110	110–170	171–299	300–440 or <500 mL/day	>440 or <200 mL/day

Management

Classification of severity

(Mild, Moderate, Severe, Critical)

1. Local complications (absent, sterile, or infected)
2. Systemic complications (absent, transient organ failure, or persistent organ failure)

Management

Classification of the severity

Determinants	No local complications	Sterile local complication	Infected local complication
No organ failure	Mild	Moderate	Severe
Transient organ failure	Moderate	Moderate	Severe
Persistent organ failure	Severe	Severe	Critical

Management

- Admission (General Ward & ICU)
- Antibiotics
- Assessment of Recovery
- Nutrition (Enteral v.s TPN)
- Determination of etiology
- Surgery (Cholecystectomy)

Complications

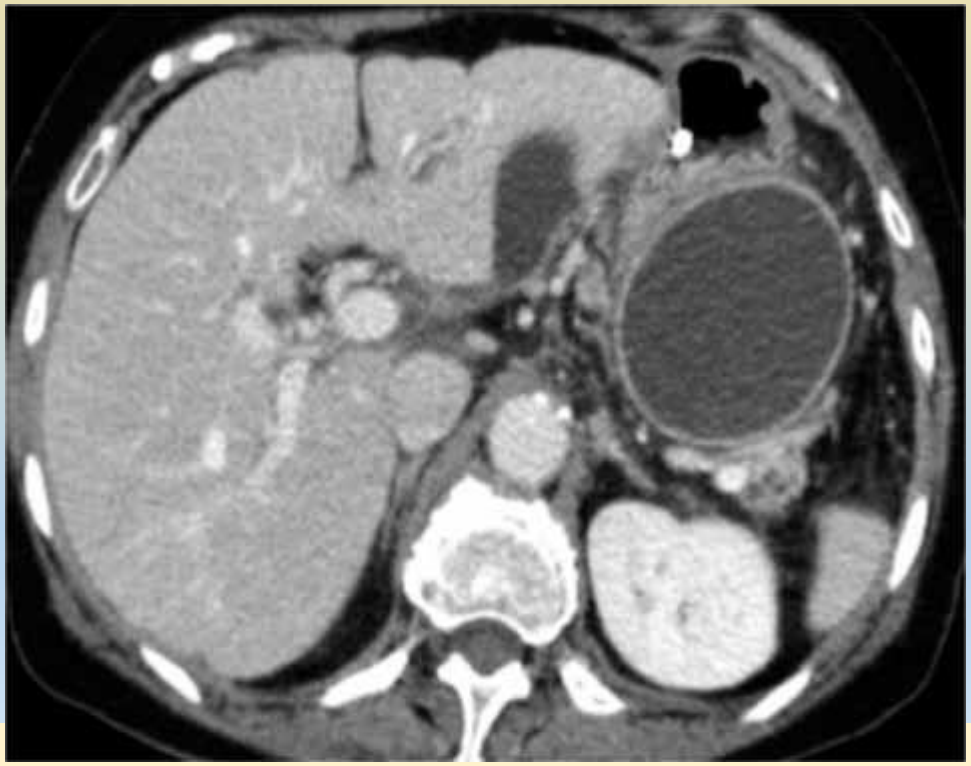
Local Complications

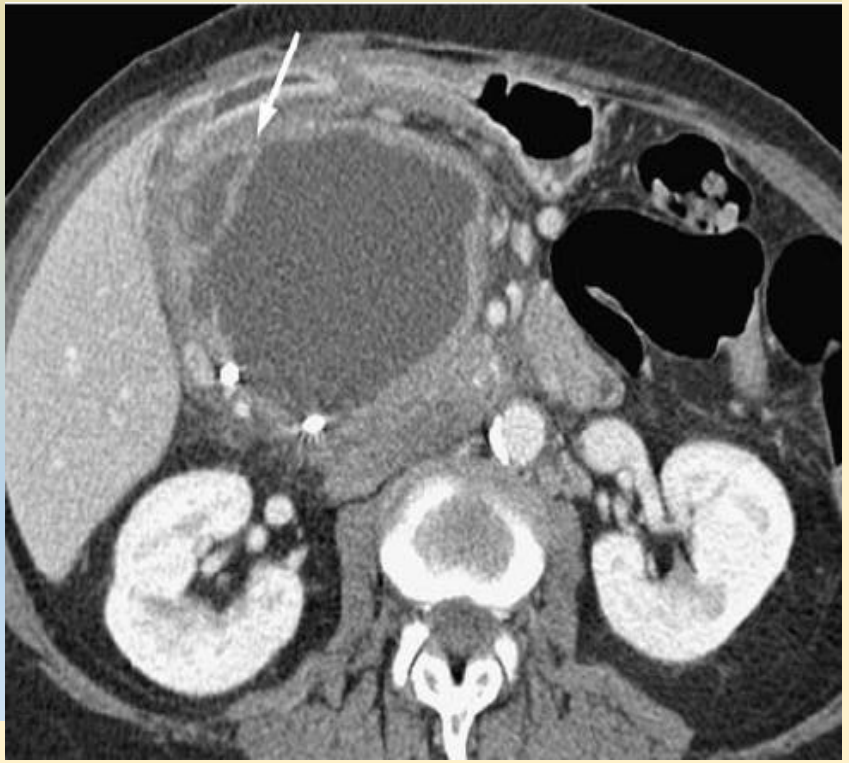
Contents	Acute (‹4Weeks , No defined wall)		Chronic (› 4 Weeks. Defined wall)	
	No infection	Infection	No infection	Infection
Fluid	Acute pancreatic fluid collection (APFC)	Infected APFC	Pseudocyst	Infected pseudocyst (Abscess)
Solid ± fluid	Acute necrotic collection (ANC)	Infected ANC	Walled off necrosis (WON)	Infected WON)

Complications

Local Complications

- Pseudocyst (EUS-high amylase, absent mucin, low CEA)
- Abscess



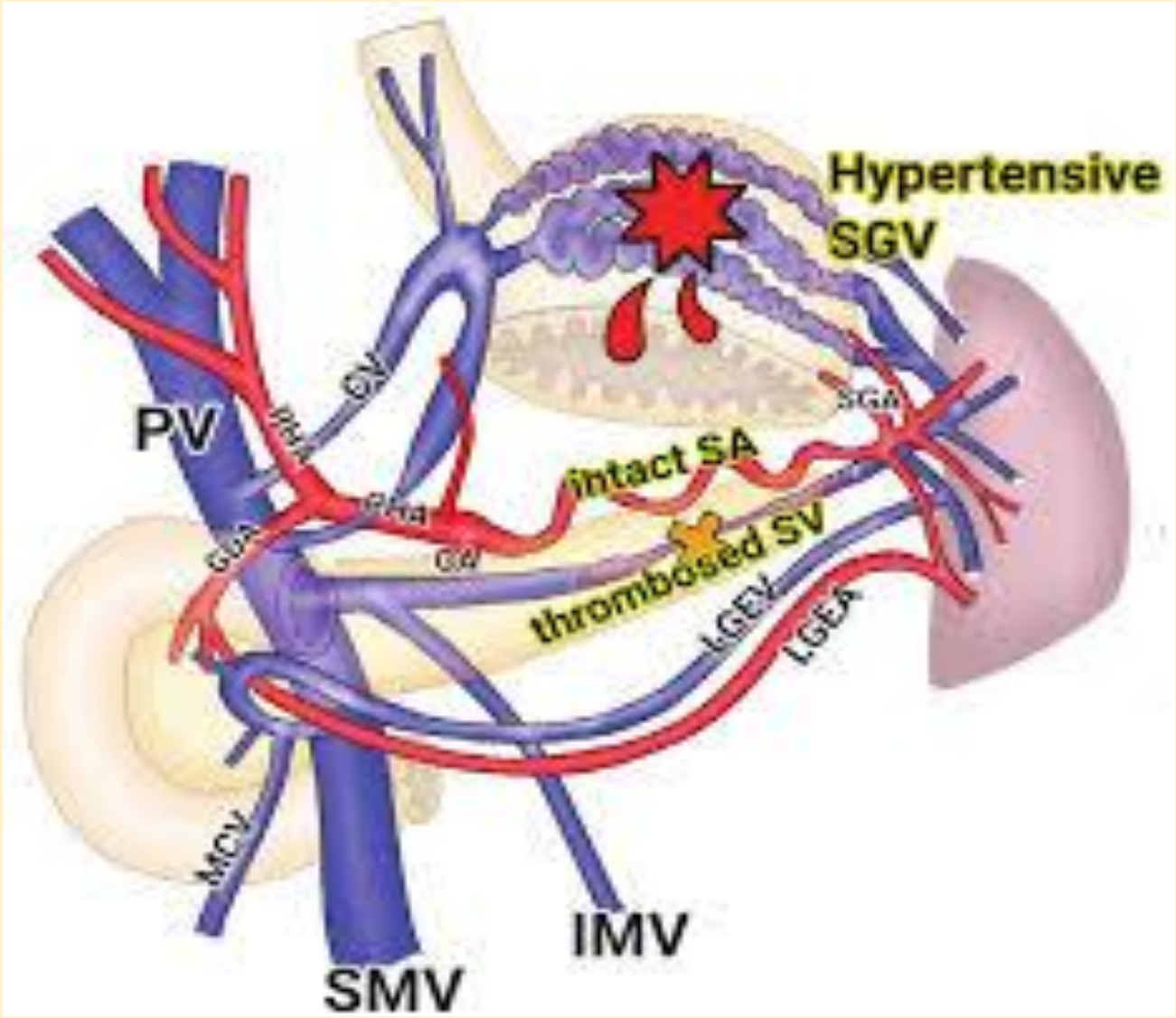


Complications

- Ascites and Pleural Effusion
- Bleeding (Peritoneal, Ductal , Gastric)
- Gastrointestinal Ischemia / Fistula or perforation
- Progressive Jaundice
- Duodenal ileus

Complications

- Left-sided portal hypertension
- Compartmental portal hypertension
- Sinistral portal hypertension



Complications

Systemic complications (Organs failure)

- Cardiovascular
- Respiratory
- Renal
- Coagulation
- Central nervous system
- Liver

Prognosis

- Mild ‹‹‹ Mortality ‹ 1%
- Severe ‹‹‹‹ High Mortality › 80 % with 4 Organ failure

Chronic pancreatitis

Chronic Pancreatitis

1. Etiology
2. Clinical features
3. Investigations
4. Complications
5. Management

Thank You