Acute Pancreatitis Revised Classification

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DEFINITION

- Defined in Atlanta 1992

- "*acute inflammation of the pancreas with variable involvement of other regional tissue or remote organ systems*"

OUTLINE

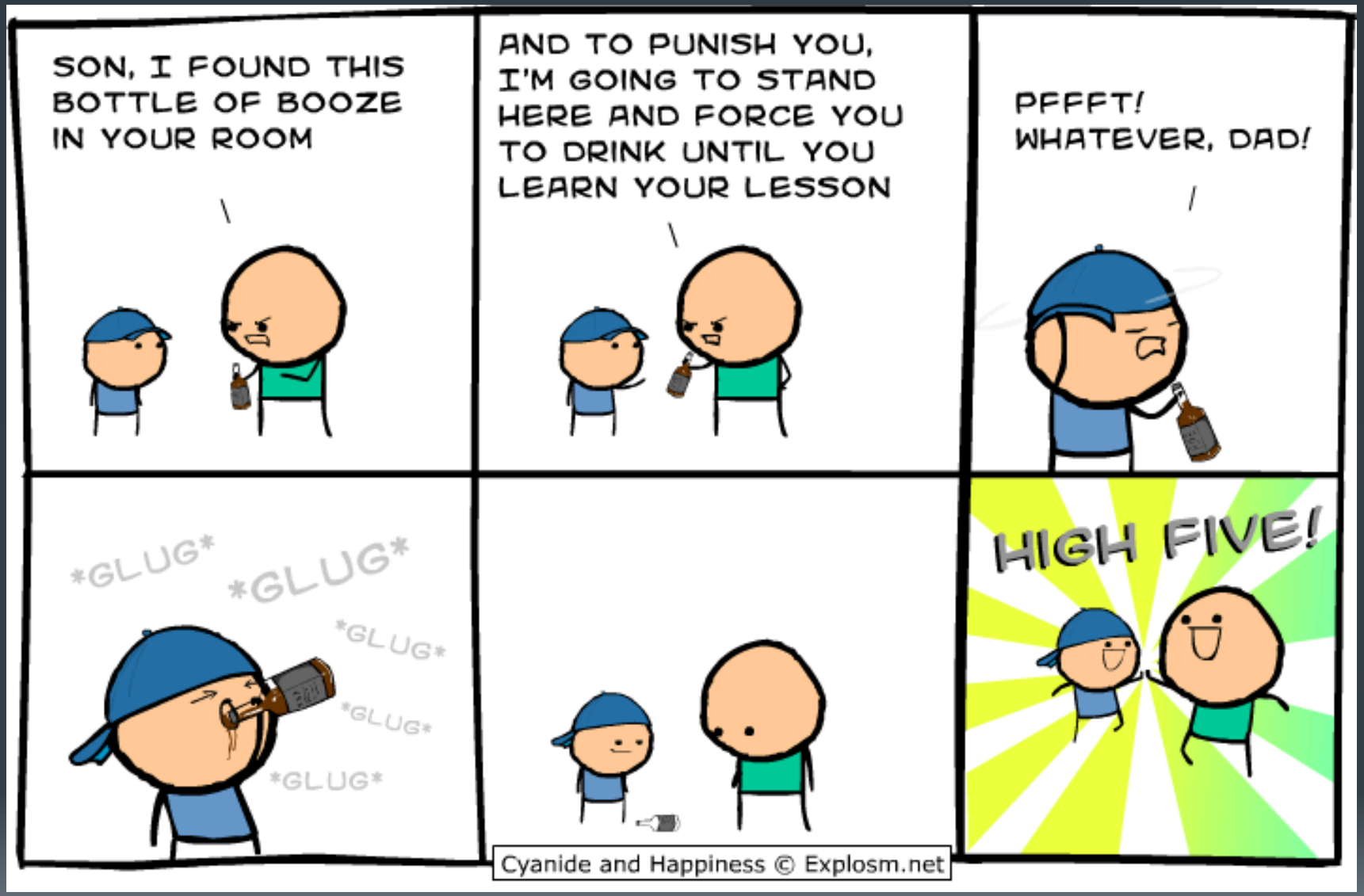
- Epidemiology
- Aetiology
- Diagnosis
- Classification
- Severity Grading
- Complications

EPIDEMIOLOGY

- 40:100,000 per annum
- M:F 1:1
- Alcoholic related common in men
- Gallstone related common in women

AETIOLOGY

- Commonly:
  - Alcohol 40%
  - Gallstones 40%
- Miscellaneous:
  - ERCP
  - Anatomical: Pancreatic divisum
  - Medications: Thiazides, corticosteroids
  - Infectious: Mumps, Coxsackie virus
  - Metabolic: Hypercalcaemia, Triglyceridaemia
  - Autoimmune: Sjogrens, IgG4
  - Trauma
  - Scorpion venom
- Idiopathic


SON, I FOUND THIS BOTTLE OF BOOZE IN YOUR ROOM
AND TO PUNISH YOU, I'M GOING TO STAND HERE AND FORCE YOU TO DRINK UNTIL YOU LEARN YOUR LESSON
PFFFT! WHATEVER, DAD!
GLUG
GLUG
GLUG
GLUG
GLUG
HIGH FIVE!
Cyanide and Happiness © Explosm.net

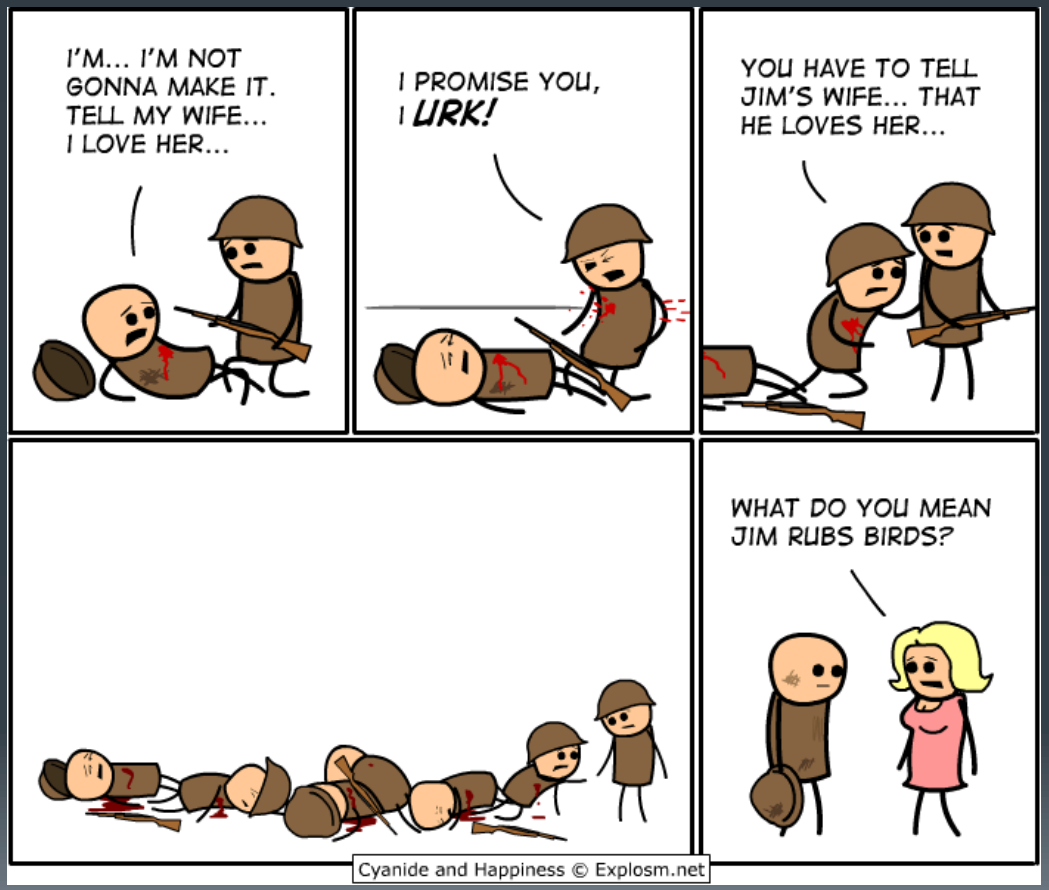
REVISED CLASSIFICATION

- Web-based global consensus by numerous pancreatologists from many disciplines (gastroenterology, surgery, pathology, radiology, acute medicine/surgery) between 2008-2012.

- Published 2013

REVISED CLASSIFICATION

- Clinical significance:
  - Incorporation of new insights into disease
  - Standardized terminology



DIAGNOSIS

- 2 of the following 3 features:
  - 1) Central upper abdo pain radiating to back
  - 2) Serum amylase or lipase 3 times upper limit
  - 3) Characteristic features on imaging

- Therefore, CT evidence is usually not required on admission provided clinical picture consistent with pancreatitis

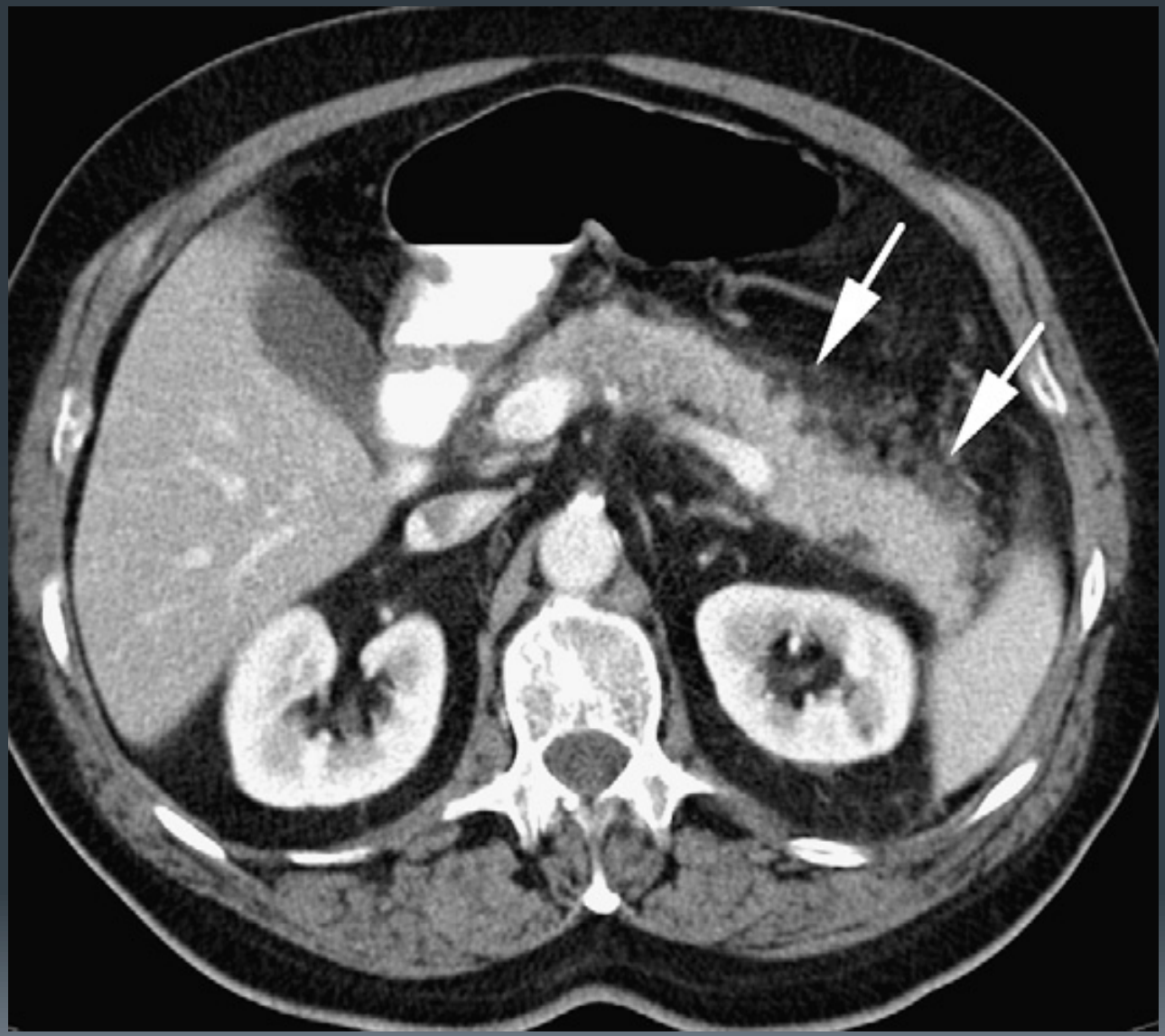
CLASSIFICATION

- Two types of acute pancreatitis:
  - 1) Interstitial Oedematous Pancreatitis
  - 2) Necrotizing Pancreatitis

INTERSTITIAL OEDEMATOUS

- Majority (80-90%) of patients
- Usually diffuse enlargement 2* inflammatory oedema
- Imaging:
  - Stranding 2* inflammatory oedema
  - Lack of pancreatic necrosis
- Usually resolves quickly over the first week

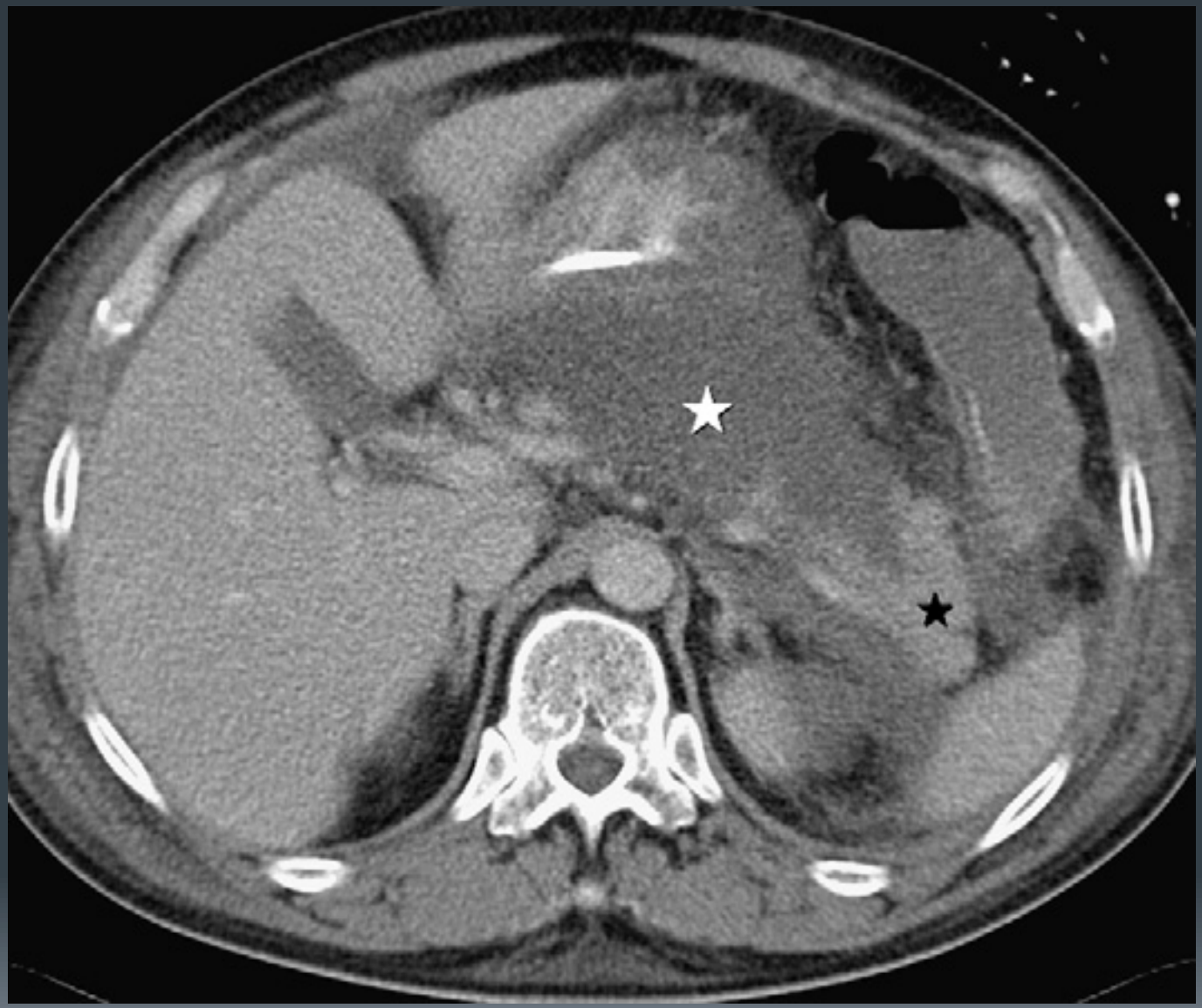
INSTERSTITIAL



NECROTIZING

- Presence of tissue necrosis
  - Pancreatic alone
  - Peripancreatic alone
  - Pancreatic and peripancreatic
- Most commonly involves pancreatic parenchyma and peripancreatic tissue
- Should be labelled infected or sterile

NECROTIZING - STERILE

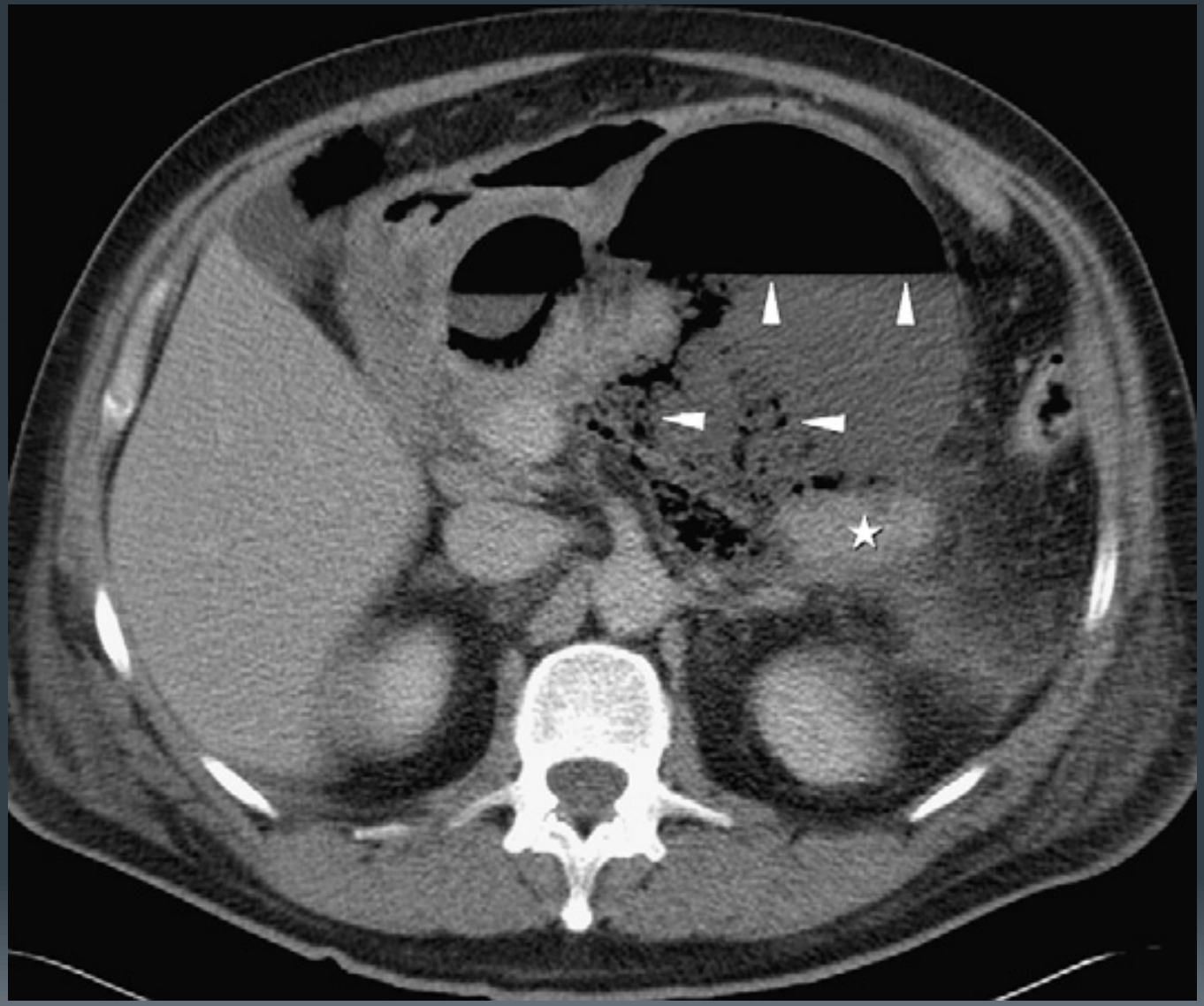


INFECTED VS STERILE NECROSIS

- Infection rare during first week
- Diagnosis based on:
  - Percutaneous/image-guided FNA with bacteria and/or fungi on gram stain
  - Positive culture

  Caution when cultures and gram stains –ve
- Presence of suppuration variable
- Infection may be 2* instrumentation (assoc w/ increased mortality and morbidity)

NECROTIZING - INFECTED



SEVERITY

- Traditional scoring systems:
  - Modified Glasgow
  - Ransons
  - CRP
  - Apache II
  - Balthazar


MODIFIED GLASSCOW (uk)

RANSONS (usa)

- Suggested scoring system:
  - Organ failure (Modified Marshall) +/- complications

SEVERITY - Glasgow

- Suitable for both ETOH and gallstone
- Can be measured at 1 point anytime within first 48hrs
- Criteria:
  - > 55 yrs of age
  - WCC > 16
  - BSL > 10mmol (in absence of diabetes)
  - Ca < 2.0
  - Renal impairment (Urea > 16mmol/l)
  - Ca <2 mmol/l
  - Albumin <32 g/l
  - AST/ALT >100
  - LDH >600 Iu/l
  - PaO2 < 60 mmHg

SEVERITY - Ransons

- On admission:
  - Age >55 yrs
  - WCC > 16
  - BSL >11 mmol/l
  - LDH > 400 iu/l
  - AST > 250 iu/l
- At 48hrs:
  - Hct decrease > 10%
  - Fluid deficit > 6L
  - Calcium <2 mmol/l
  - PaO2 < 60mmHg
  - Base deficit > 4 mEq/l
  - Urea increase by > 1 mmol/l

- Sum of both at 48 hrs

SEVERITY – APACHE II

- Based on 12 parameters related to:
  - Age; biochemistry, clinical factors, disease

Table 2 APACHE II scoring system

	Acute physiology score								
	High normal range					*Low normal range*			
Variable	*+4*	*+3*	*+2*	*+1*	*0*	*+1*	*+2*	*+3*	*+4*
Temperature (°C)	>41	39-40.9		38.5-38.9	36-38.4	34-35.9	32-33.9	30-31.9	<29.9
Mean arterial pressure (mm Hg)	>160	130-159	110-129		70-109		50-69		<49
Heart rate (ventricular; beats/min)	>180	140-179	110-139		70-109		55-69	40-54	<39
Respiratory rate	>50	35-49		25-34	12-24	10-11	6-9		<5
Oxygenation (mm Hg)									
A_{aDO2} when F_{iO2} >0.5	>500	350-499	200-349		<200				
P_{aO2} when F_{iO2} <0.5					PO_2 >70	PO_2 61-70		PO_2 55-60	PO_2 <55
Arterial pH	>7.7	7.6-7.69		7.5-7.59	7.33-7.49		7.25-7.32	7.15-7.24	<7.15
Serum Na (mmol/l)	>180	160-179	155-159	150-154	130-149		120-129	11-119	<110
Serum K (mmol/l)	>7	6-6.9		5.5-5.9	3.5-5.4	3-3.4	2.5-2.9		<2.5
Serum creatinine (mg/100 ml) Double score for ARF	>3.5	2-3.4	1.5-1.9		0.6-1.4		<0.6		
Packed cell volume (%)	>60		50-59.9	46-49.9	30-45.9		20-29.9		<20
While blood cell count ($\times 10^3/mm^3$)	>40		20-39.9	15-19.9	3-14.9		1-2.9		<1
Glasgow coma scale*									

* Score = 15 − actual Glasgow coma scale.

SEVERITY - Balthazar

- Based on CT 3-10 days after admission

Grade		MR %
A	Normal	0
B	Focal/diffuse enlargement	0
	Small intrapancreatic fluid collection	
C	+ Peripancreatic inflammatory change	8
	<30% necrosis	
D	+ Extrapancreatic fluid collection	24
	30-50% necrosis	
E	+ Extensive extrapancreatoc fluid collection	50
	Pancreatic abscess	
	>50% necrosis	

SEVERITY – Mod Marshall

- Persistent organ failure > 48 hrs most reliable marker for disease severity
- Targets 3 organ systems most commonly affected by SIRS:
  - Respiratory
  - Cardiovascular
  - Renal
- Transient vs persistent organ failure:
  - Transient defined as < 48 hrs
  - Persistent defined as > 48 hrs

SEVERITY – Mod Marshall

Modified Marshall scoring system

	Score				
Organ System	**0**	**1**	**2**	**3**	**4**
Respiratory (Pao_2/Fio_2)	>400	301–400	201–300	101–200	≤101
Renal[a]					
Serum creatinine, µmol/L	≤134	134–169	170–310	311–439	>439
Serum creatinine, mg/dL	<1.4	1.4–1.8	1.9–3.6	3.6–4.9	>4.9
Cardiovascular (systolic blood pressure, mm Hg)[b]	>90	<90 Fluid responsive	<90 Not fluid responsive	<90, pH <7.3	<90, pH <7.2

LOCAL COMPLICATIONS

- Peripancreatic fluid collection
- Pancreatic pseudocyst
- Acute necrotic collection

- Splenic/portal vein thrombosis
- Colonic necrosis
- Retroperitoneal haemorrhage
- Gastric outlet dysfunction

SYSTEMIC COMPLICATIONS

- Renal failure
- Circulatory failure
- Respiratory failure
- Exacerbation of pre-existing comorbidities e.g. IHD, CCF, COPD, Diabetes, CLD

DEFINITION OF SEVERITY

- Severity will not be able to be made definitively in the first 48 hrs.

- Therefore, pts presenting with SIRS should be treated as **severe** acute pancreatitis

SEVERITY CLASSIFICATION

Degrees of severity

Mild Acute Pancreatitis

- No organ failure
- Lack of local or systemic complications

Moderately Severe Acute Pancreatitis

- Organ failure that resolves within 48 hours (transient organ failure) and/or
- Local or systemic complications (sterile or infected) without persistent organ failure

Severe Acute Pancreatitis

- Persistent single or multiple organ failure (>48 hours)

MILD PANCREATITIS

- No organ failure or local or systemic complications

- Symptoms usually resolve rapidly
- Mortality rare
- Pancreatic imaging often not required

MODERATE PANCREATITIS

- Transient organ failure, local +/- systemic complications not persisting > 48hrs

- Increased morbidity:
  - longer stay & need for intervention

- Increased mortality (<8%) compared to mild

SEVERE PANCREATITIS

- Persistent organ failure, local +/- systemic complications persisting > 48 hrs

- Mortality risk ~ 36 – 50%.

COMPLICATIONS - DEFINITIONS

- Peripancreatic fluid collection
- Pancreatic pseudocyst
- Acute necrotic collection
- Walled-off necrosis
- Sterile vs infected necrosis

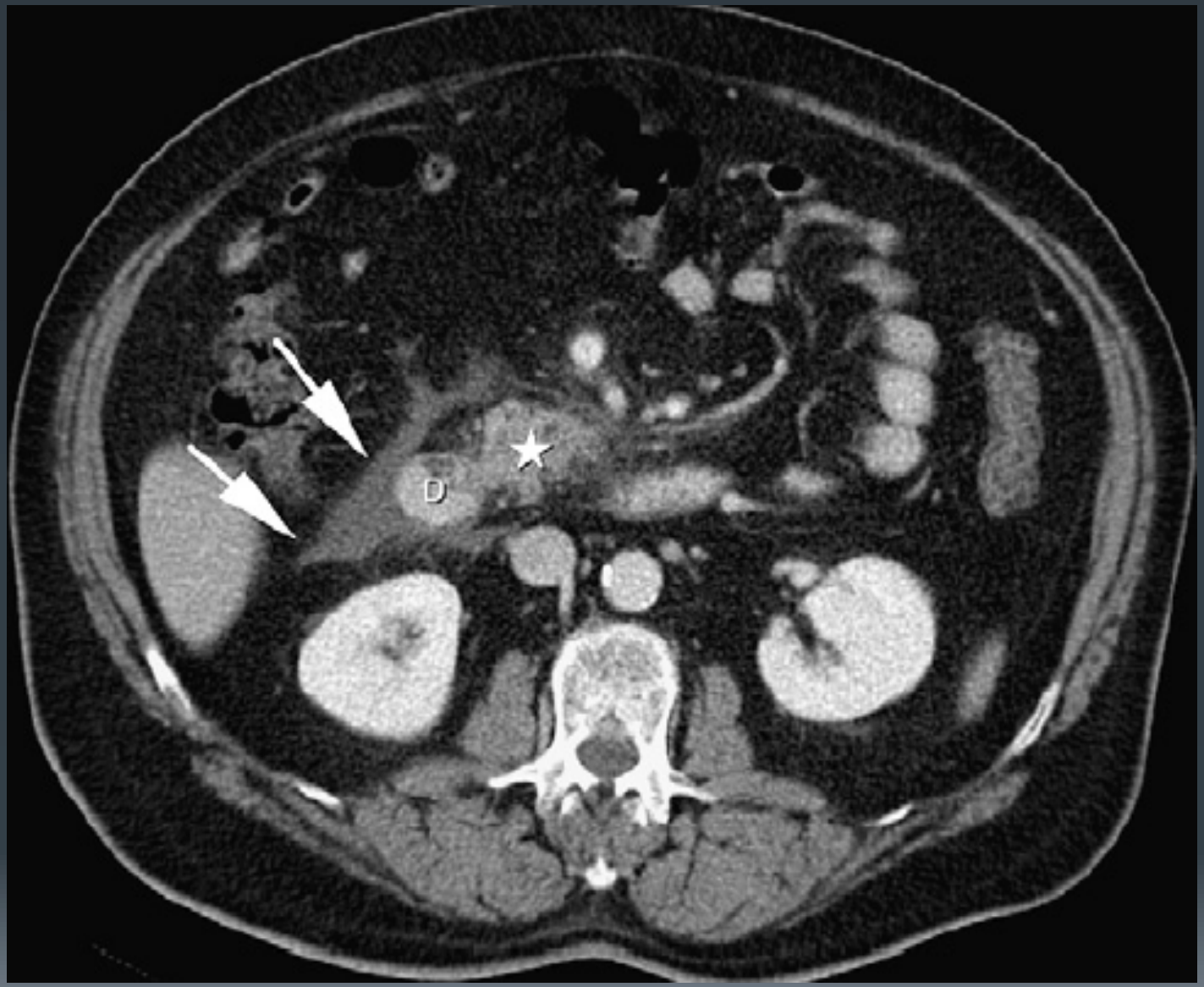
PERIPANCREATIC FLUID

- Develops in early phase of interstitial oedematous pancreatitis within 4 weeks

- Lack well-defined wall
- Confined by normal fascial planes in retroperitoneum

- Not assoc. with necrotizing pancreatitis, remain sterile, usually resolve without intervention.

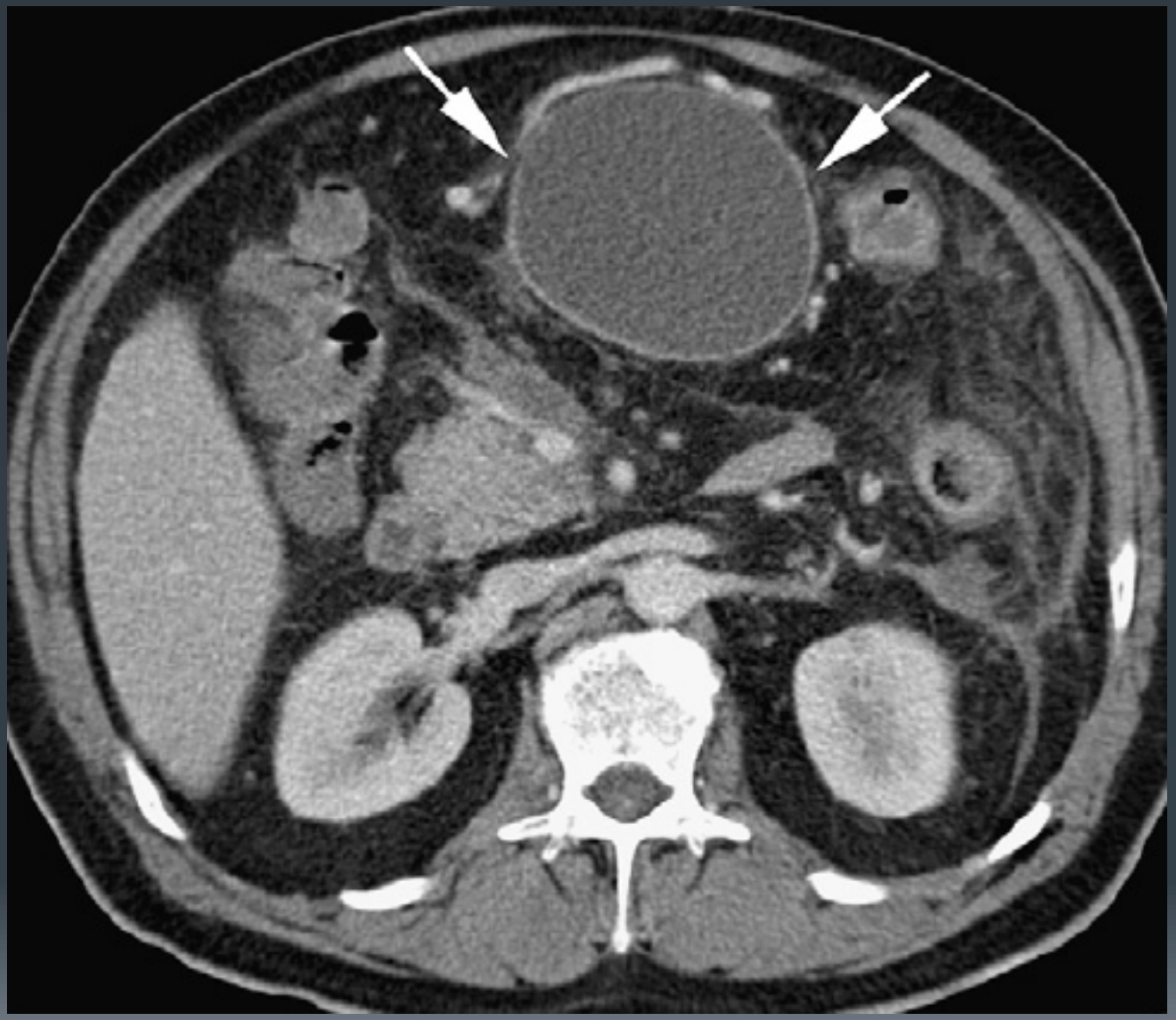
PERIPANCREATIC FLUID



Pancreatic pseudocyst

- After 4 weeks
- Peripancratic/pancreatic fluid collection surrounded by well-defined wall.
- Presumed pathogenesis: disruption of main pancreatic duct or intrapancreatic branches without necrosis
- May be sterile or infected

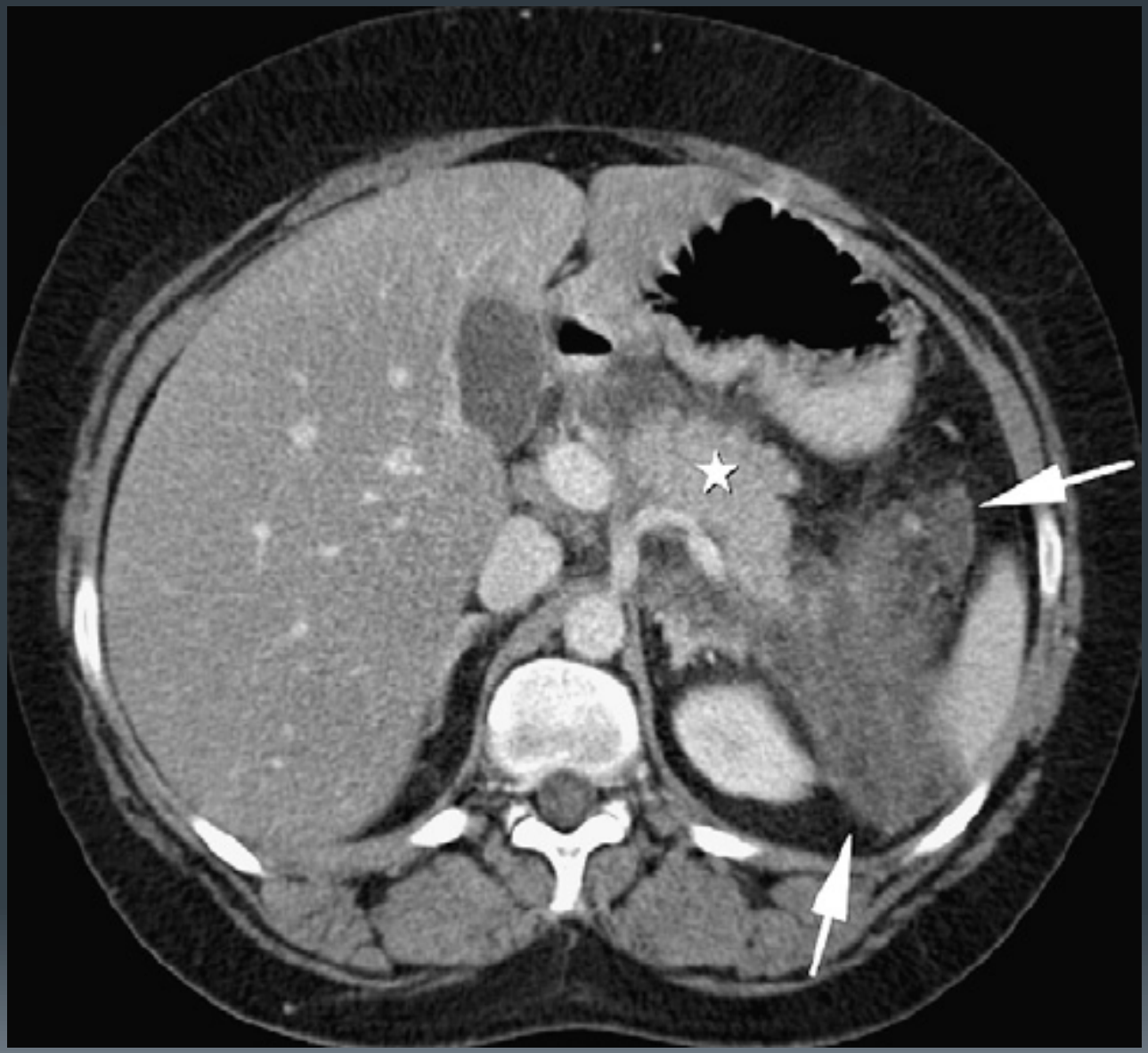
Pancreatic pseudocyst



ACUTE NECROTIC COLLECTION

- Collection within 4 weeks containing variable amounts of fluid and solid (necrotic) material due to pancreatic necrosis
- Can closely resemble peripancreatic fluid on CT in first few days
- May be sterile or infected

ACUTE NECROTIC COLLECTION



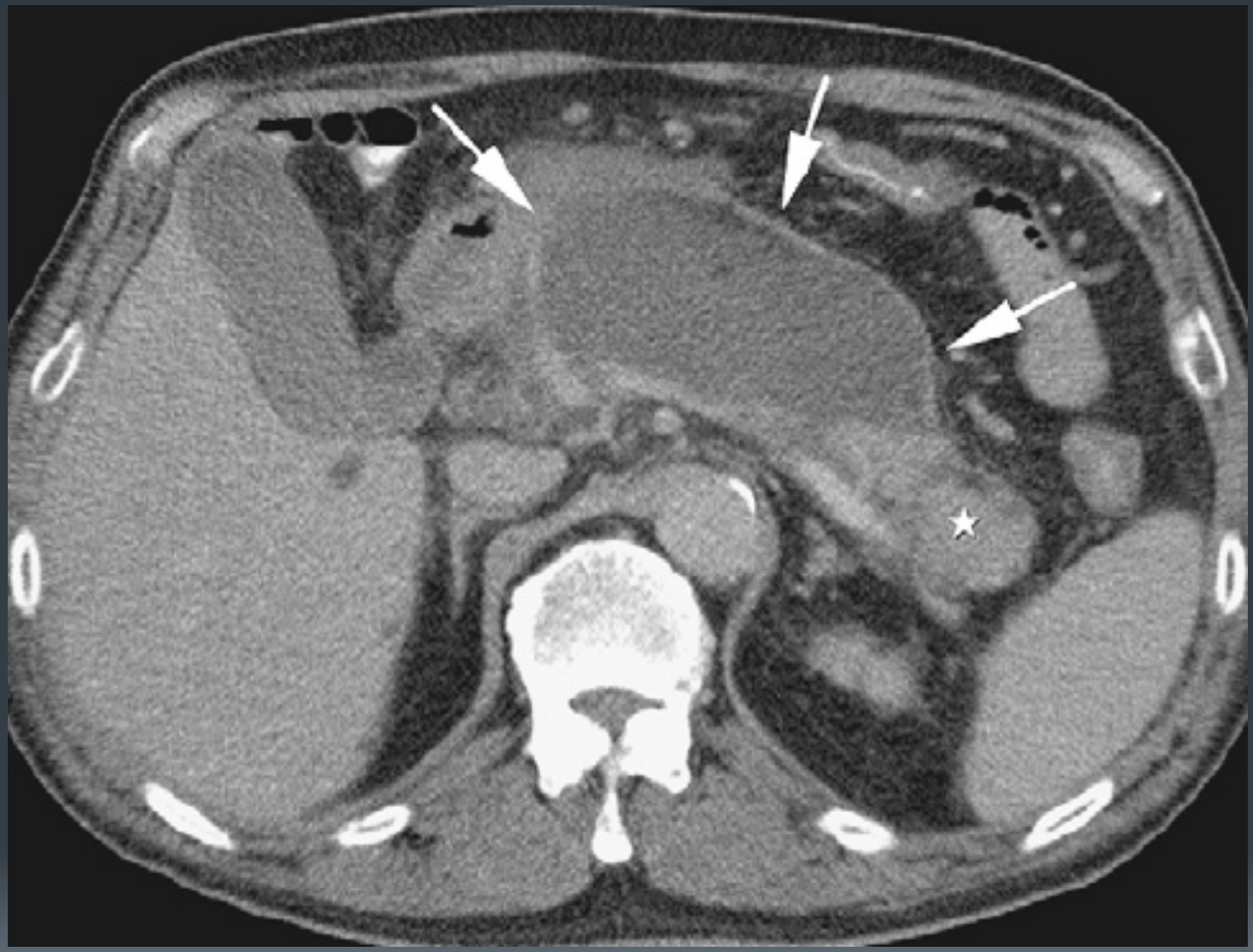
WALLED-OFF NECROSIS

- Collection with varying amounts of liquid and solid material, surrounded by mature, enhancing wall, usually after 4 weeks

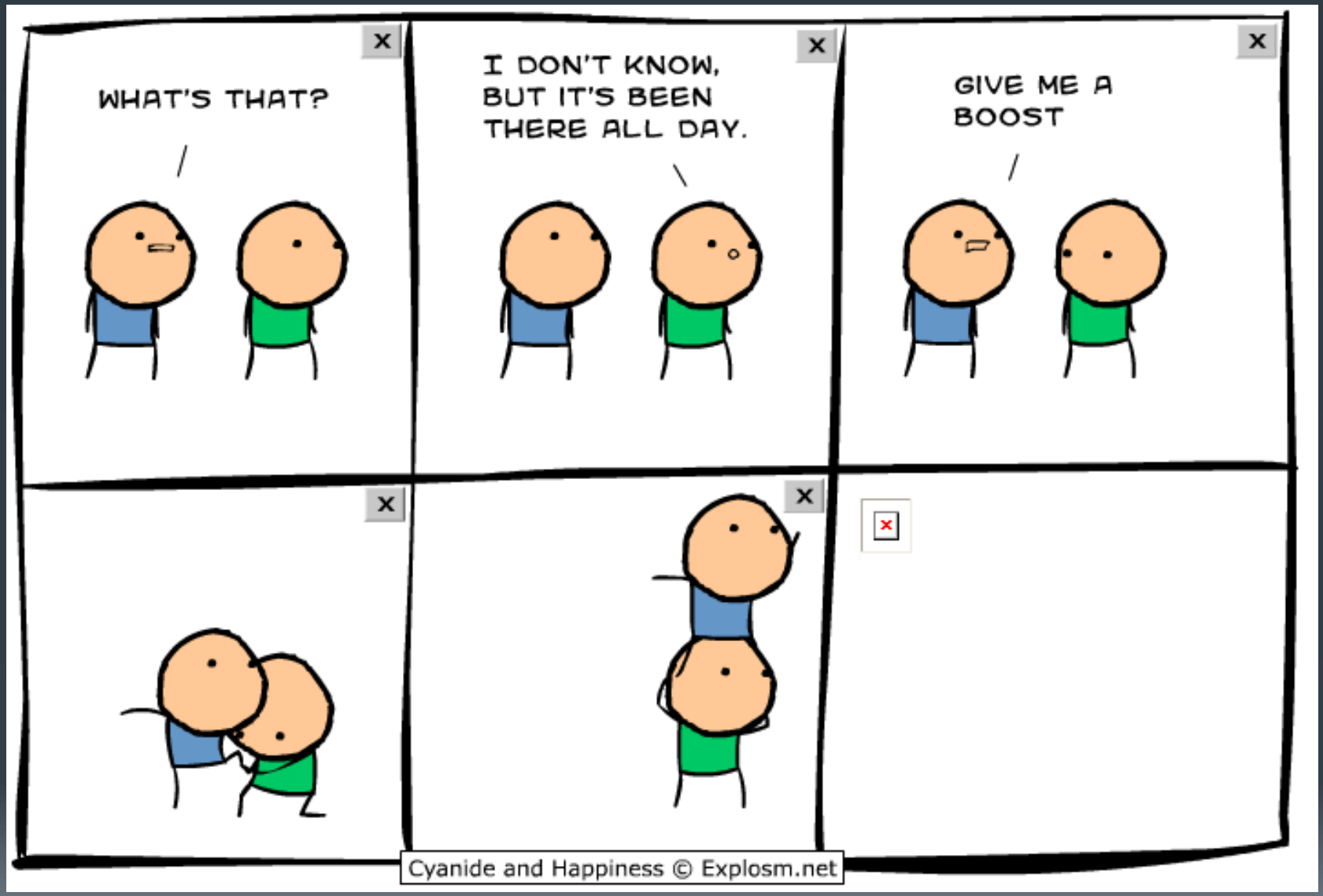
- This name replaces following terms:
  - Organized pancreatic necrosis,
  - Necroma
  - Pancreatic sequestrum
  - Pancreatic pseudocyst with necrosis
  - Subacute pancreatic necrosis

- May be sterile or infected

WALLED-OFF NECROSIS



QUESTIONS?


WHAT'S THAT?
I DON'T KNOW, BUT IT'S BEEN THERE ALL DAY.
GIVE ME A BOOST
Cyanide and Happiness © Explosm.net