

MRCs e-Learning Case 2

You are the surgical SHO on-call and are asked to see a 53 year old lady in A&E who is complaining of severe upper abdominal and back pain with vomiting. Her pulse is 112bpm regular, BP 178/92 and O₂ saturations are 91% on air.

Q1: What is your initial approach to managing this patient?

A1:

- ABCDE approach
- Supplemental O₂ to maintain saturations >94% if no contraindications
- Early analgesia +/- antiemetic to assist with further history and examination

On further questioning she admits to drinking large quantities of alcohol over the last fortnight, and reports beginning to feel unwell 24 hours earlier. She is normally fit and well, and has never had anything like this before. On examination following administration of analgesia, her pulse remains 110bpm, BP 110/82, RR 22, saturations 95% on O₂ 4lpm via nasal specs, temperature 39.1 C. Her tongue is dry, and there is involuntary guarding with localised tenderness in her epigastric region.

Q2: What is your differential diagnosis?

Q3: What do you want to do next?

A2:

- Acute pancreatitis
- Perforated viscus
- Biliary pathology
- Myocardial infarction
- Bowel obstruction
- Mesenteric ischaemia

A3:

- Aggressive fluid resuscitation – at least 10mL/Kg over 1 hour, catheterisation and strict input/output monitoring
- Full set of haematological and biochemical blood tests including amylase +/- serum lipase.
- Arterial blood gas analysis
- Septic screen inc blood and urine culture
- 12 lead ECG
- Imaging: erect CXR, USS, CT

Selected blood results show:

Hb 14.2	pH 7.31
WCC 18.1	pO ₂ (2L) 10.2
Amylase 1458	pCO ₂ 4.0
Na 132	BE -8.9
K 4.3	Lac 2.8
Ur 14.3	
Cr 159	
Glucose 13.1	
Ca 1.56	

AST 150
ALT 90
Bilirubin 29
Alk phos 130
CRP 173

Q4: Would a normal serum amylase exclude acute pancreatitis?

A4: No. Serum amylase can be normal in up to 10% of cases, particularly in acute on chronic pancreatitis, where there is loss of acinar cell mass, or in late presentations of severe necrotising pancreatitis.

Her CXR is shown here:



Q5: What does the CXR show?

Q6: What is the cause of this in acute pancreatitis and what are the other possible respiratory complications?

Q7: How would you manage this complication?

A5: A left-sided pleural effusion with minimal pulmonary oedema

A6: Effusions may be caused by transdiaphragmatic lymphatic blockage or be due to a pancreaticopleural fistula (very rare). They are usually left-sided (68%), with 22% bilateral and 10% right-sided.

Other respiratory complications include:

- atelectasis
- severe pulmonary oedema
- acute respiratory distress syndrome (ARDS)

- A7:
- Conservative management with oxygen supplementation
 - Careful monitoring of respiratory function +/- ABGs
 - Intermittent CPAP

Q8: The CT slice below shows an acutely inflamed pancreas. What are the CT findings consistent with acute pancreatitis – are you aware of any radiological scoring systems?



A8:

Balthazar radiological scoring system:

Grade	CT findings
A	Normal pancreas
B	Pancreatic enlargement
C	Pancreatic inflammation and/or peri-pancreatic fat
D	Single peri-pancreatic fluid collection
E	Two or more fluid collections and/or retroperitoneal air

Q9: What are other clinical scoring systems used in acute pancreatitis?

A9:

Modified Glasgow Score:

- Assessed over first 48 hours
- Three or more = severe pancreatitis with high mortality

Modified Glasgow Score for Pancreatitis	
Variable	Score one point if present
Age	>55 years
pO ₂	<8.0 kPa
WCC	>15x10 ⁹ /litre
Ca ²⁺ (uncorr.)	<2.0 mmol/L
ALT	>100 IU
LDH	>600 IU
Glucose	>10 mmol/L
Urea	>16 mmol/L
Albumin	<32g/L

Ranson's criteria:

On admission:

- Age >55
- WCC > 16
- Glucose >11
- LDH > 400
- AST >250

After 48 hours:

- Fall in haematocrit by more than 10%
- Fluid sequestration of > 6L
- Serum Ca²⁺ < 2.0 mmol/L
- PaO₂ < 8 kPa
- Urea rise by > 0.9 mmol/L
- Base deficit > 4

Prognostic implications:

Score	Mortality
0-2	2%
3-4	15%
5-6	40%
>6	Approaching 100%

APACHE II:

Multivariate scoring system used widely for severely ill patients on ICU with a variety of disease processes. Takes into account age and premorbid state.

Q10: What is the pathophysiology of hypocalcaemia in acute pancreatitis?

A10: Calcium is chelated after the saponification of fat by pancreatic lipases.

The patient is transferred to HDU for Level 2 care.

Q11: What additional management should now be initiated?

A11:

- Ongoing fluid resuscitation and electrolyte replacement. CVC +/- arterial line
- Analgesia
- Ongoing debate re: use of antibiotics. If infection of necrotic tissue is suspected and a fine needle aspiration has been performed, meropenem or piperacillin/tazobactam may be commenced. Treatment continued for 14 days or stopped if infection not confirmed
- Nutrition: TPN vs. early enteral feeding. Post pyloric feeding with NJT is a preferred option
- Stress ulcer prophylaxis
- Early ERCP if gallstones present
- Consider interventional radiology guided drainage of abscess or pseudocyst. Late necrosectomy may be required in very severe cases. Exploratory laparotomy greatly increases mortality and should be avoided in severe acute pancreatitis

Q12: What further possible local and systemic complications may arise?

A12:

- | | |
|-----------|---|
| Systemic: | Acute lung injury and ARDS
Acute kidney injury
Shock
Multiple organ dysfunction syndrome (MODS)
Secondary type I diabetes mellitus
Death |
| Regional: | Abscess formation
Pseudocyst formation
GI bleeding
Fistulation
Splenic artery pseudoaneurysm formation
Venous thrombosis |