

Case conference

- Case ID: 1184xxxx
 - R2 鄭凱文
- Supervisor VS 林立偉
 - 2014/11/24

Patient Profile

- 36Y/o ♂
- 2014/xx/xx 23:22
- E4V5M6
- T/P/R=36.6/107/18; BP = 137/91mmHg
- SpO2 = 98%
- 檢傷主訴：病人主訴為腹痛、吐、冒汗
(痛苦指數 08)
- Triage = II

Present Illness

- C.C: abd. Pain tonight
- Vomitus twice, non-bilious
- epigastric, intermittent cramping; no radiation
- alcohol (-)
- diarrhea (-)
- cold sweating (+)

Past History

- NKDA
- Abd. OP: nil
- DM under OHA (規律服藥)

Physical Examination

- Cons. Clear
- not well-looking
- neck supple
- clear BS; deep respiration (Kussmaul?)
- abd.:
 - soft, slight distended
 - No Murphy sign
- No inguinal/scrotal swelling
- warm ext.
- N.E.: grossly intact



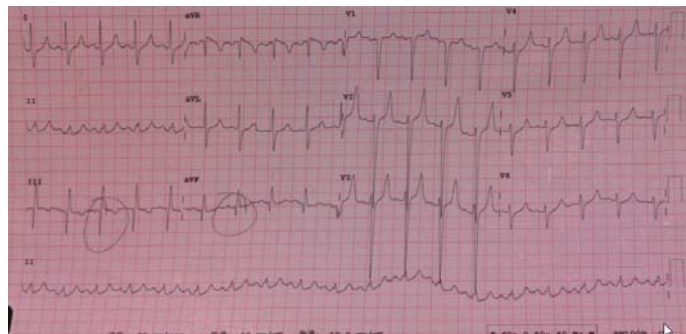
Impression

- Abd. Pain, susp. DKA
- r/o pancreatitis
- r/o ileus
- r/o atypical ACS

Initial order (day 1, 23:30)

- EKG
- F/S (352) → RI 10units sc st
- CBC, D/C, plt
- Crea., AST, Cl, T-bil., lipase, troponin-I
- B/C* I
- N/S 500mL st, then run 100mL/hr
- Ketone
- KUB
- NOVA (VBG, Na, K)

EKG



Lab data

pH	7.468	
pCO ₂	28.1	mmHg
pO ₂	65.5	mmHg
Hct	52	%
Na ⁺	143.6	mmol/L
K ⁺	5.21	mmol/L
Ca ⁺⁺	4.06	mg/dL
Glu	505	mg/dL
Lac	40.6	mg/dL
Results - Calculated		
HCO ₃ ⁻	20.5	mmol/L
TCO ₂	21.4	mmol/L
BE _{ecf}	-3.4	mmol/L
BE _b	-1.0	mmol/L
SBC	23.5	mmol/L
A	116.5	mmHg
A-aDO ₂	51.0	mmHg
aA	0.6	
RI	0.8	
PO ₂ /FIO ₂	313.5	mmHg
SO ₂ %	94.2	
Hb	17.3	g/dL
ionCa ⁺⁺	4.21	mg/dL

CBC, Plt, D/C	生化		
WBC	14.8x1000/μL	AST	62U/L
RBC	4.71x10 ⁶ /μL	T-Bil.	0.99mg/dL
Hb	13.9gm/dL	Crea.	2.42mg/dL
Hct	39.4%	eGFR	30.49
MCV	83.7fL	Cl	97mmol/L
MCH	29.5pg	Lipase	4380U/L
MCHC	35.3%	Troponin-I	<0.01
RDW	13.3%		
Plt	314x1000/μL		
Differential count			
Seg	60.0%		
Lymph.	6.0%		
Monocyte	5.0%		
Eosionophil	0.0%		
Basophil	0.5%		
Aty. Lymph*	0.0%		
Band	25.0%		
Metamyelo.	3.5%		
Myelocyte	0.0%		

Day 2, 00:38

- NG decompression
- Promeran ivd st
- B/C* I (2nd)
- Ceftriaxone 2g ivd st
- Metronidazole 500mg ivd st
- Sign CT permit
- on 2nd line

Day 2, 01:29 bedside echo

- No ascites
- No hydronephrosis
- no gall stone
- small bowel wall thickening (+)
- no CBD dilatation

Day 2

- WBC 14.8k (band 25%)
- 02:46
 - recheck BP/HR (36.4/96/16; 129/84mmHg)
 - abd. CT w/o contrast
 - TG, LDH

生化	
Ketone	0.6mmol/L
LDH	645U/L
TG	2805mg/dL

Abd. CT

Day 2

- 已和病人 & family 解釋 severity ↑ · mortality & complication rate ↑

- 03:36
 - 排 GI 床
 - Check F/S & BP/HR q4h
 - 待轉 EC
 - N/S 500mL st
- 05:45
 - N/S 500mL st
- 08:34
 - 轉 EC30

Ranson's Scores	
On Admission	48 Hours Later
(X) Age > 55 y/o	() Hct fall > 10%
() WBC > 16000	() BUN rise > 5
() Glu > 200	() Ca < 8
() LDH > 350	(X) PaO ₂ < 60
(X) GOT > 250	() Base deficit < 4
	() Fluid > 6L

*Score Interpretation
 Under 3: Predicted mortality about 1%
 3-4: Predicted mortality of 15%
 5-6: Predicted mortality of 40%
 Over 6: Predicted mortality of 100%

Table 82-5 CT Severity Index for Acute Pancreatitis

Grade of Acute Pancreatitis	Score
Normal pancreas	0
Pancreatic enlargement	1
Inflammation involving pancreas and peripancreatic fat	2
Single fluid collection or phlegmon	3
Two or more fluid collections or phlegmons	4

Degree of Pancreatic Necrosis

Degree of Pancreatic Necrosis	Score
No necrosis	0
Necrosis of one third of pancreas	2
Necrosis of one half of pancreas	4
Necrosis of more than one half of pancreas	6

Interpretation (minimum score = 0 and maximum score = 10)

Severity Index	Mortality (%)	Complications (%)
0-1	0	0
2-3	3	8
4-6	6	35
7-10	17	92

Handwritten note: No Contrast
Ca 2.3-42

EC order, day 2, 10:07

- O2 mask 6L/min
- on monitor
- IVF D5S 120mL/hr
- Foy 100mg in N/S 500mL run 20mL/hr
- NPO + NG decompression
- Meropenem 500mg ivd st, 250mg ivd q6h
- 聯絡 ICU
- on critical
- admission to AICU

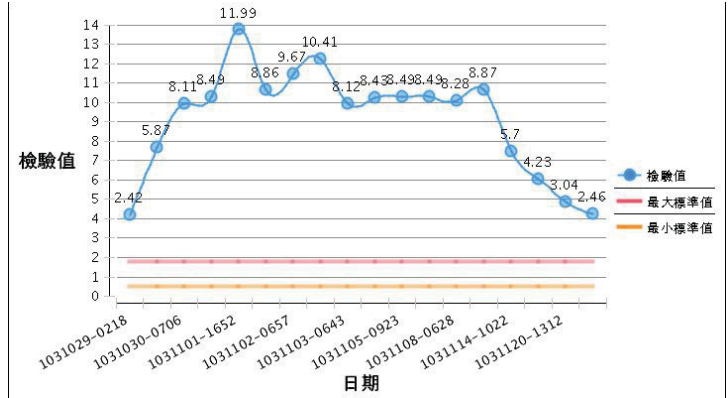
Then...

- Day2:
 - O2 mask 6~10L/min
 - D5S 500mL + RI 10units run 120mL/hr
- Day3:
 - Rasitol 2amp iv q6h (U/O = 45)
 - DC (I/O = -1172)
 - 500mL iv st *7 次 → U/O > 50mL/hr
- Day4: O2 N/C 4L/min

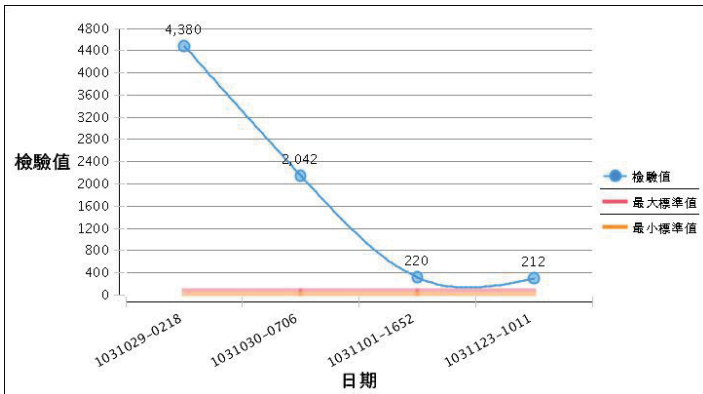
- Day5:
 - Sudden loss of consciousness
 - Intubation
 - Rasitol 2amp iv q6h
 - on CVVH
- Day8: D5W 250mL via NG q8h + on TPN
- Day9: 轉 MI
- Day10: extubation
- Day11: 轉一般病房
- Day27: MBD

pH	6.85
pCO ₂	52.6
pO ₂	64
HCO ₃ ⁻	9.2
Na	148
K	6.2

Crea.



Lipase



Discussion

Tenner S, Baillie J, Dewitt J, Vege SS. American College of Gastroenterology guideline: management of acute pancreatitis. Am J Gastroenterol. 2013;108(9):1400-15.

Diagnosis

- 三項符合兩項
 - abdominal pain consistent with the disease
 - serum amylase / lipase > 3X the upper limit of normal
 - characteristic findings from abdominal imaging
- contrast CT / MRI of the pancreas should be reserved for patients in whom
 - the diagnosis is unclear
 - fail to improve clinically within the first 48 – 72 h after hospital admission

Etiology

- **Transabdominal ultrasound** should be performed in all patients
- In the absence of gallstones / significant history of alcohol use, a serum **triglyceride** should be obtained and considered the etiology if > **1,000 mg/dl**
- > **40y/o**, a **pancreatic tumor** should be considered as a possible cause
- Endoscopic investigation in patients with acute idiopathic pancreatitis should be limited

Initial assessment & risk stratification

Table 3. Definitions of severity in acute pancreatitis: comparison of Atlanta and recent revision

Atlanta criteria (1993)	Atlanta Revision (2013)
Mild acute pancreatitis	Mild acute pancreatitis
Absence of organ failure	Absence of organ failure
Absence of local complications	Absence of local complications
Severe acute pancreatitis	Moderately severe acute pancreatitis
1. Local complications AND/OR	1. Local complications AND/OR
2. Organ failure	2. Transient organ failure (<48h)
GI bleeding (>500cc/24hr)	Severe acute pancreatitis
Shock – SBP ≤90mmHg	Persistent organ failure >48h*
PaO ₂ ≤60%	
Creatinine ≥2mg/dl	
GI, gastrointestinal; SBP, systolic blood pressure.	
*Persistent organ failure is now defined by a Modified Marshall Score (6,8)	

Table 4. Clinical findings associated with a severe course for initial risk assessment*

Patient characteristics
Age >55 years (53,57)
Obesity (BMI >30kg/m ²) (68)
Altered mental status (69)
Comorbid disease (53)
The systemic inflammatory response syndrome (SIRS) (6,53,54,70,71)
Presence of >2 of the following criteria:
– pulse >90 beats/min
– respirations >20/min or PaCO ₂ >32mmHg
– temperature >38°C or <36°C
– WBC count >12,000 or <4,000 cells/mm ³ or >10% immature neutrophils (bands)
Laboratory findings
BUN >20 mg/dl (63)
Rising BUN (63)
HCT >44% (62)
Rising HCT (62)
Elevated creatinine (72)
Radiology findings
Pleural effusions (73)
Pulmonary infiltrates (53)
Multiple or extensive extrapancreatic collections (67)
BMI, body mass index; BUN, blood urea nitrogen; HCT, hematocrit; WBC, white blood cell.
*The presence of organ failure and/or pancreatic necrosis defines severe acute pancreatitis.

Patients with organ failure / SIRS → ICU

Initial management

- Aggressive hydration
 - 250-500 ml/hr of isotonic crystalloid solution
 - unless cardiovascular / renal comorbidities exist
 - Early aggressive intravenous hydration is most beneficial the **first 12 – 24 h**
- In a patient with severe volume depletion
 - manifest as hypotension and tachycardia,
 - more rapid repletion (bolus)

- the preferred isotonic crystalloid replacement fluid
 - **Lactated Ringer's solution**
- Fluid requirements should be reassessed at frequent intervals
 - within 6 h of admission
 - for the next 24 – 48 h
- The goal of aggressive hydration
 - to **decrease the blood urea nitrogen**

ERCP in acute pancreatitis

- acute pancreatitis with concurrent acute cholangitis
 - should undergo **ERCP within 24h** of admission
- ERCP is not needed in most patients with gallstone pancreatitis
 - who lack laboratory or clinical evidence of ongoing biliary obstruction
- In the absence of cholangitis and/or jaundice to screen for highly suspected choledocholithiasis
 - **MRCP or endoscopic ultrasound (EUS)** first
 - rather than diagnostic ERCP
- Pancreatic duct stents / postprocedure rectal NSAID suppositories should be utilized to prevent severe post-ERCP pancreatitis in high-risk patients

The role of antibiotics in acute pancreatitis

- Antibiotics should be given for an extrapancreatic infection
 - Cholangitis
 - catheter-acquired infections
 - bacteremia, urinary tract infections, pneumonia
- Routine use of prophylactic antibiotics in patients with severe acute pancreatitis is **not recommended**
- The use of antibiotics in patients with sterile necrosis to prevent the development of infected necrosis is **not recommended**

- Infected necrosis should be considered in patients with pancreatic or extrapancreatic necrosis who **deteriorate or fail to improve after 7 – 10 days** of hospitalization. In these patients, either should be given
 - (i) initial CT-guided FNA for Gram stain and culture to guide use of appropriate antibiotics
 - (ii) empiric use of antibiotics without CT FNA

- In patients with infected necrosis, antibiotics known to penetrate pancreatic necrosis
 - **carbapenems, quinolones, and metronidazole**
 - may be useful in delaying or sometimes totally avoiding intervention
- Routine administration of antifungal agents is **not recommended**

Nutrition in acute pancreatitis

- In mild AP, **oral feedings** can be started immediately if there is no nausea and vomiting, and abdominal pain has resolved
- In mild AP, initiation of feeding with a **low-fat solid diet** appears as safe as a clear liquid diet
- In severe AP, **enteral nutrition is recommended to prevent infectious complications.**
 - Parenteral nutrition should be avoided unless the enteral route is not available, not tolerated, or not meeting caloric requirements
- **Nasogastric** delivery and nasojejunal delivery of enteral feeding appear comparable in efficacy and safety