THE HONG KONG COLLEGE OF ANAESTHESIOLOGISTS

FINAL FELLOWSHIP EXAMINATION (INTENSIVE CARE)
LONG ANSWER PAPER

2 Questions

Monday 21 July 2025 (1:30 pm - 3:30 pm)

NOTICE
(A) Write your answers to the two questions in separate books.
(B) Read the questions carefully, and in view of the time available, balance your answers to encompass points of great importance without going into needless detail.
(C) Record your number on the cover of each book and hand in all books.
(D) Use ink or ball-point pen.

QUESTION 1 (50marks)

A 35-year-old male is brought to the Emergency Department after a high-speed motor vehicle collision head-on with another vehicle. He was not wearing a helmet during the accident. On arrival, he is intubated and mechanically ventilated due to a decreased level of consciousness and desaturation.

Vital signs are:

- Heart rate: 120 beats per minute
- Blood pressure: 90/60 mmHg
- Oxygen saturation: 88% on FiO_2 of 1
- Glasgow Coma Scale (GCS): 6 (E1 VT M4)

Initial assessments and CT reveal the following injuries:

- Traumatic thoracic injury: Multiple rib fractures on the left side with flail chest segment and pulmonary contusions.
- Traumatic brain injury (TBI): Subarachnoid hemorrhage and cerebral contusion with signs of raised intracranial pressure (ICP) on CT scan.
- Bilateral orbital fracture with bilateral swollen eyes.
- Left femur fracture

1. **Describe the immediate (4 marks) and subsequent management (6 marks) of his traumatic thoracic injuries and associated respiratory failure.**
2. **Outline the management strategies for raised intracranial pressure in this patient. (10 marks)**

3. **On day 2 in ICU the patient developed tachycardia with heart rate of 130/min and desaturation SpO2 87% on FiO2 0.8. Complete blood count (CBC): Hemoglobin 12 g/dL, platelets 50 x10⁹/L. There are no signs of deep vein thrombosis in the limbs. A petechial rash was noted over the chest and neck.**

   a)

      i. **Based on the clinical presentation, what is the most likely diagnosis? (2 marks)**
      ii. **What is the name of criteria you can use for diagnosis? (2 marks)**
      iii. **List the key components of the criteria used to establish this diagnosis. (8 marks)**

   b) Describe the pathophysiology of the conditions seen in this case. (3 marks)

   c) Outline your immediate management plan for this phenomenon. (4 marks)

4. **Patient was noted to have dilated pupils 3 days after admission. Loss of brainstem reflex was demonstrated. Outline and elaborate the concerns of proceeding to brainstem test in a case of multi trauma. (8 marks)**

5. **How would you conduct apnea test if a patient was put on V-A ECMO for support? (3 marks)**

QUESTION 2 (50 marks)

A 46-year-old lady with good past health presented to the Accident and Emergency department with increasing generalized malaise and myalgia for 3 days. One day before admission to the hospital she was noted to be confused. She also complained of headaches. Initially her vitals were stable, and she was admitted to the medical ward. While in the ward her condition deteriorated with shock and difficulty in breathing. Her body temperature was 38.5C, blood pressure was down to 75/40mmHg, and dopamine infusion started at 15ml/hr. She needed O_2 6L/min via nasal canula to maintain her Oxygen saturation. She was admitted to the Intensive Care Unit (ICU) for further management.

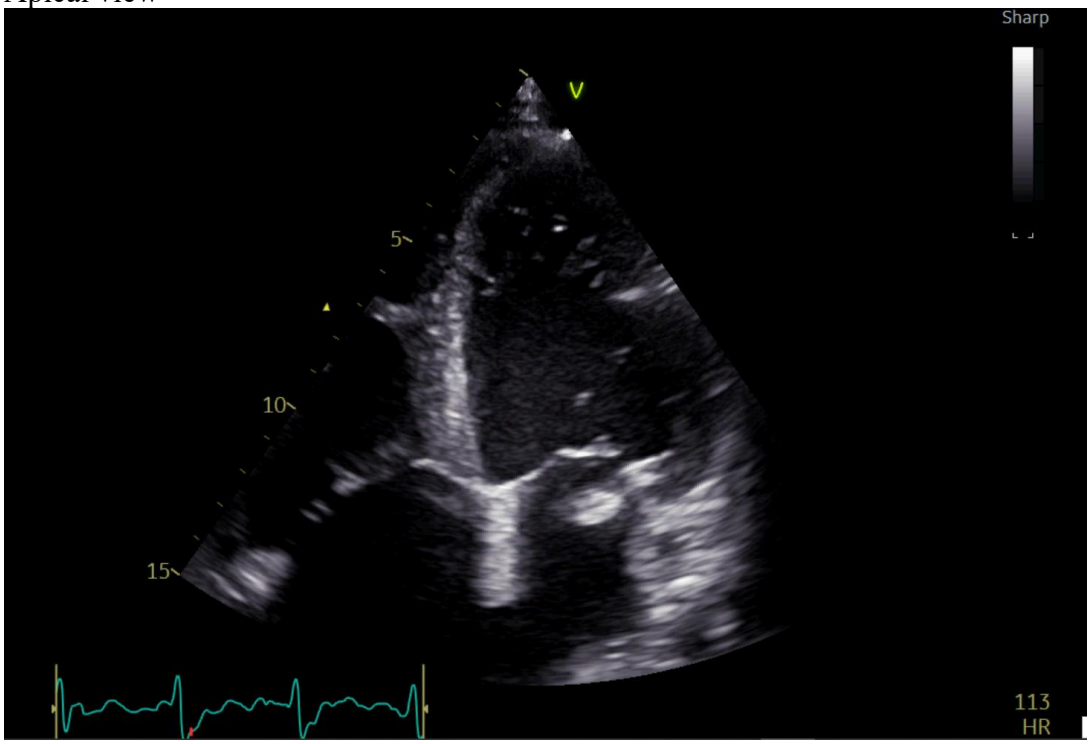
1. **What is your differential diagnosis? (2 marks)**

Upon arrival in ICU, she further deteriorated and needed to be intubated and put on mechanical ventilation.

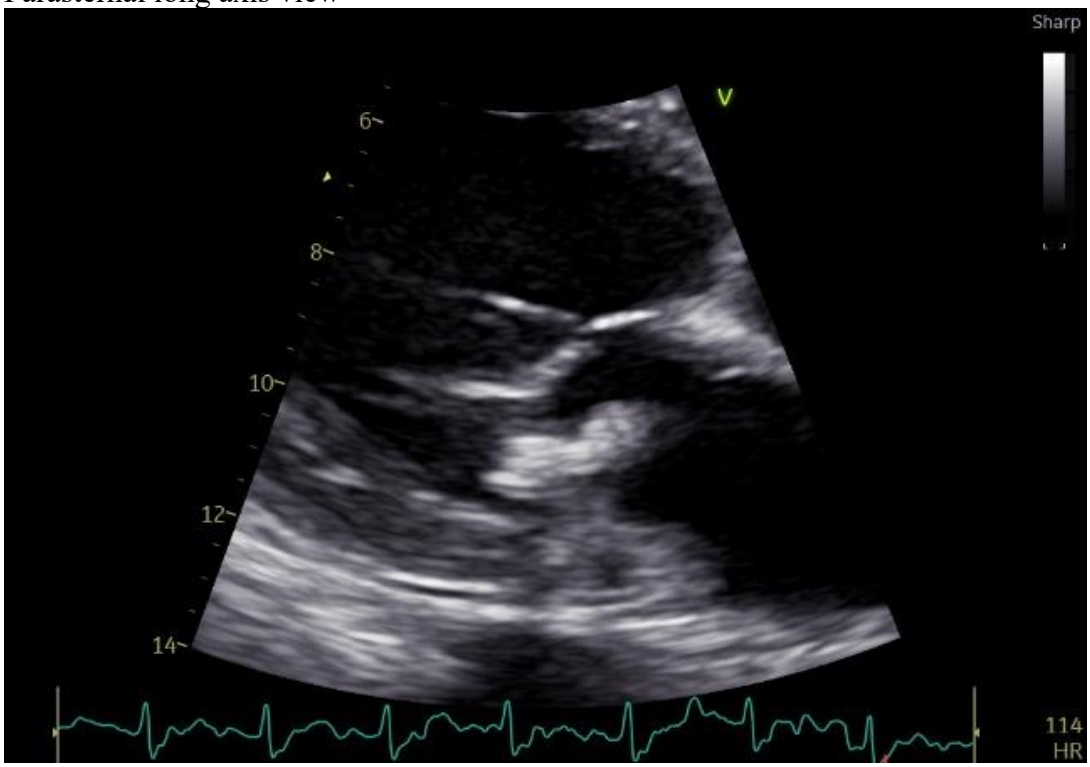
2. **How would you proceed with assessment and investigations to find a diagnosis and organ dysfunction? (5 marks)**

3. **The echo finding capture is shown below.**

Apical view



Parasternal long axis view



a) **Comment on the findings. (1 mark)**
b) **What is the diagnosis and what treatment will you start for her? (2 marks)**

4. **The blood culture grew Methicillin Sensitive Staphylococcus Aureus.**
   a) **What antibiotic will you use? (1 mark)**
   b) **You decide to administer the antibiotic as a continuous infusion. State the following regarding this method of antibiotic delivery.**

i. **Pharmacological basis (2 marks)**
ii. **Disadvantages (2 marks)**
iii. **The available evidence (2 marks)**

5. **What are the indications for early surgery for this condition? (4 marks)**

6. **The patient was on low ventilator support but suddenly deteriorated with desaturation and respiratory distress.**
   a) **Give 4 possible causes for her deterioration <u>other than</u> severe mitral regurgitation? (1 mark)**
   b) **How would you manage her if the cause was severe mitral regurgitation? (7 marks)**

7. **She needed high-vasopressor support. You decide to institute advanced heamodynamic monitoring on her.**
   a) **List 3 advanced hemodynamic monitoring methods with different principles. (3 marks)**
   b) **For <u>two invasive</u> techniques of advanced heamodynamic monitoring methods briefly explain the <u>components</u> and <u>setting up of each technique</u> and possible <u>complications.</u> (12 marks)**

8. **She was stabilized and underwent surgery. Post operative period she still needed mechanical ventilator support. The post-operative day 2 endo tracheal aspirate (ETA) result is shown below. What would be your approach to managing this result? (6 marks)**

Specimen	Endo tracheal aspirate
Microscopy	White blood cells: A large number of WBC present Epithelial cells : Few squamous epithelial cells seen
Gram Stain	No organism seen
Sputum Culture	Greater than 10000CFU/ml of Acinetobacter calcoaceticus-Acinetobacter Baumannii
Antibiotics	Organism 1
Amikacin	R
Cefepime	R
Ceftazidime	R
Ceftriaxone	R
Ciprofloxacin	R
Gentamicin	R
Imipenem	R
Levofloxacin	R
Meropenem	R
Minocycline	S
Septrin	R
Sulperazon	R
Tazocin	R
Unasyn	R

- End -