THE HONG KONG COLLEGE OF ANAESTHESIOLOGISTS

FINAL FELLOWSHIP EXAMINATION (INTENSIVE CARE)
SHORT ANSWER PAPER

15 Questions

Monday 5 August 2019 (9:00 am - 11:30 am)

NOTICE

(A) Write your answers to the 15 questions in separate books.

(B) It is not necessary to rewrite the question in your answer book.

(C) You should answer each question in ten minutes or less.

(D) The questions are worth equal marks.

(E) Record your number on the cover of each book and hand in all books.

(F) Use ink or ball-point pen

Question 1

Compare and contrast the use of unfractionated heparin (UFH) and citrate as an anticoagulation agent during continuous renal replacement therapy in terms of:

i) Mechanism of action(s) (2 marks)
ii) Metabolism and elimination (2 marks)
iii) Specific methods of monitoring (2 marks)
iv) Potential adverse effects. List four for each anticoagulation agent (2 marks)
v) Other non-anticoagulation properties. Outline one for each anticoagulation agent (2 marks)

Question 2

Outline the special concerns in acute trauma care of a term pregnant patient. (10 marks)

Question 3

A 50-year-old man, with history of diabetes mellitus, hypertension and end stage renal failure pending Tenckhoff catheter insertion, was admitted to the intensive care unit for management of septic shock. His blood culture showed growth of methicillin resistant *Staphylococcus aureus* (MRSA).

i) Briefly outline how you would proceed with finding the source(s) of infection. (3 marks)
ii) List the risk factors for hospital acquired (HA) and community acquired (CA) MRSA infections. (2 marks)
iii) Outline how you would treat this patient including antibiotics of choice. (5 marks)

Question 4

i) Define the terms:
    a) Pulse pressure variation (0.5 mark)
    b) Fluid responsiveness (0.5 mark)
ii) Outline the physiological principles of fluid responsiveness. (Use diagrams for explanations if necessary) (3.5 marks)

iii) Discuss the use of PPV on arterial pressure waveforms in the assessment of fluid responsiveness in an intubated patient. What preconditions must be fulfilled for its proper use? (5.5 marks)

Question 5

A large bore dialysis catheter for continuous renal replacement therapy (CRRT) was accidentally inserted into carotid artery in a patient with multi-organ failure with disseminated intravascular coagulation (DIC). It was only discovered after the catheter was sutured in place.

i) List six potential complications (3 marks)
ii) You are the consultant in-charge. Outline your management plan. (7 marks)

Question 6

i) List four viruses other than influenza virus which can cause severe community acquired pneumonia in an immunocompetent patient. (2 marks)
ii) Compare and contrast the use of rapid antigen detection test, reverse transcription polymerase chain reaction (rt-PCR) and viral culture in the diagnosis of influenza pneumonia. (4 marks)
iii) Discuss the antiviral treatment options for influenza pneumonia? (4marks)

Question 7

Your intensive care unit has decided to incorporate a mechanical chest compression device - LUCAS - into clinical practice. As the consultant, please state how you would prepare your unit for the adoption of this device. (8 marks) How would this device help during cardio pulmonary resuscitation (CPR). (2 marks)

Question 8

A 65 year old male with history of liver cirrhosis is admitted to your unit with acute kidney injury (AKI).

i) State how you would investigate this patient with AKI. (4 marks)
ii) Outline the pathophysiology of hepato renal syndrome (HRS). (2 mark)
iii) Outline your specific management plan. (4 marks)

Question 9

What is percutaneous tracheostomy and list the major techniques available (3marks). List the advantages and disadvantages of tracheostomy in patients requiring prolonged mechanical ventilation in Intensive Care Unit. (7marks).

Question 10

A 30 year-old man presented to the emergency department for coma. Blood gas analysis showed severe metabolic acidosis. Toxic alcohol poisoning was suspected.

i) What are the mechanisms and clinical features of methanol toxicity? (3 marks)
ii) What further tests would you like to arrange and what is/are the reason(s) behind? (4 marks)
iii) What treatment would you like to initiate? (3 marks)

Question 11

Compare and contrast Apixaban and Dabigatran with respect to their pharmacology (2 marks), laboratory assay (2 marks) and treatment options for major bleeding on these agents (6 marks)

Question 12

What is post-intensive care syndrome? (2 marks) What are the clinical features? (4 marks) What measures can be taken to prevent it? (4 marks)

Question 13

The following success rates of radial artery catheterization were observed in a prospective cohort of Intensive Care Unit patients.

	USG guided technique	Conventional technique
Patients not in shock	85/90 (94.4%)	240/270 (88.9%)
Patients in shock	185/260 (71.1%)	40/80 (50%)
Overall	270/350 (77%)	280/350 (80%)

Explain the findings in the table. (7 marks)
If you see similar problem mentioned above in the future study, what research methods could be used to deal with this problem? (3 marks)

Question 14

With regard to Thiamine deficiency, discuss:

i) The spectrum of clinical syndromes seen in critically ill patients (6 marks) and the underlying pathophysiology (2 marks)
ii) The use of thiamine in patients with septic shock. (2 marks)

Question 15

Outline issues of importance in managing obese patients in the Intensive Care Unit? (10marks)

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