THE HONG KONG COLLEGE OF ANAESTHESIOLOGISTS

FINAL FELLOWSHIP EXAMINATION (INTENSIVE CARE)
LONG ANSWER PAPER

2 Questions

Monday 7 August 2017 (1:00 pm - 3:00 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

A 60-year-old man tried to hurl a lit Molotov cocktail (petrol bomb) on board in a crowded train carriage when it was about to reach Tsim Sha Tsui station. The fire caused severe burn to the man himself.

The burned victim sustained significant burn injury involving his scalp, face, neck, bilateral forearms and upper arms, front chest wall and upper abdomen. You are the consultant on call and have been asked to admit this patient by your Accident & Emergency Department colleagues to the Intensive Care Unit

Question A
On arrival to your unit, the victim is fully conscious and orientate to time, person and place. SpO2 100% on 4L O2/min via nasal cannula, Respiratory Rate (RR) 20/min, Heart Rate (HR) was 110/min regular, Blood Pressure (BP) 92/45 mmHg.

(1) How to define major burn injury? (5 mark)
(2) What will be your initial fluid choice and rate of administration during first 24 hours as well as your goal of titrating fluid? (5 mark)

Question B
You have decided to intubate this patient early to avoid potential airway problem.

(1) Name any 4 clinical features that may indicate the possibility of significant inhalational injury. (2.5 mark)
(2) Define types of inhalational injury. (2.5 mark)
(3) How would you ventilate this patient, with reference to his burn injury? (5 mark)

Question C
After the initial 24 hours, you reassess the patient's burn wound again.

(1) What would be your indications for escharotomy and/or fasciotomy? (5 mark)
(2) How would be your environmental infection control measures to prevent his burn wound infection. (5 mark)

Question D
You are aware of the importance to provide adequate nutrition for this patient.

(1) Outline the general principles for nutritional support in this patient. (10 marks)

Question E
Despite your plan for nutritional support, your desired target was not met.

(1) What are mechanisms for hyper-metabolism in burn injury? (2.5mark)
(2) What are disadvantages for increased protein catabolism for critical ill burn patient? (2.5 mark)
(3) What are the possible pharmacologic drugs used for attenuation of the hyper-metabolism and catabolism in burn patient? (5 mark)

Question 2

You are called to a cardiac arrest in the Surgical Ward. A 55 year old gentleman had just had elective laparoscopic cholecystectomy 4 hours ago. Surgery and immediate postoperative phase was uneventful. After returning to the ward, the patient had complained of abdominal discomfort, became restless and insisted on going to the toilet to open his bowels. He collapsed upon return to his bed.

When you arrive at the scene, cardiopulmonary resuscitation (CPR) with chest compression and ventilation is in progress by the cardiac arrest team. Electrocardiogram (ECG) shows sinus tachycardia with no pulse during the 2-minute rhythm check. The patient has a history of hypertension well-controlled on medications.

Question A

(i) Give eight (8) reversible causes of Pulseless Electrical Activity (PEA) (4 marks). Underline four (4) of the causes that you think most likely have happened in this patient given his circumstances.

Hemoperitoneum was suspected as there was extensive oozing of blood from the laparoscopic wound sites and his abdomen was distended. It is obvious to you that the patient is exsanguinating.

He has group/screen available, but the Medical Officer had overlooked ordering a X-match. The Blood Bank will need at least 30 minutes before X-matched blood is available. The operating theatre team including the anaesthestist and surgeon have been informed to prepare for emergency laparotomy.

(ii) Detail how you would volume-resuscitate this patient to improve his chance of successful return of spontaneous circulation (ROSC). (6 marks)

ROSC was achieved after 10 minutes. The operating theatre (OT) is ready and the patient was transferred intubated to the OT for emergency laparotomy. The bleeding was identified to be from a spurting cystic artery due to a slipped hemostatic clip. There was 2L blood in the peritoneal cavity. The patient had a 2nd episode of PEA on the table lasting 5 minutes until the cystic artery was clamped. His hemodynamics stabilized after hemostasis was achieved and intravascular volume replaced.

Question B

(i) What are the possible causes of coagulopathy in a patient with catastrophic bleeding requiring large volume of fluid resuscitation and blood transfusion. (4 marks)

(ii) Outline the measures you can take to prevent such coagulopathy and justify your answer. (6 marks)

Postoperatively, the patient was kept intubated and ventilated and sent to the ICU.
The patient remain unconscious despite minimal anaesthesia given for the laparotomy and of concern was the extent of post-anoxic brain damage. The family wants to know if the patient will wake up.

Question C

(i) Discuss how you would neuroprognosticate patients who remain comatose post-resuscitation from cardiac arrest (5 marks)

(ii) What neuroprotection strategies can you offer this patient in order to give him the best chance of neurological recovery? Justify your decision. (5 marks)

Question D

Outline your post-resuscitation management in the ICU. (10 marks)

Question E (Do not refer to the case scenario when answering this question)

Based on the evidence and publications that is currently available, what temperature would you choose for therapeutic hypothermia for your patients post-cardiac arrest? A moderate hypothermia level of 32-34^{0}C or a mild hypothermia of 36^{0}C? Justify your answer. (10 marks)

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