SELF ASSESSMENT

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Multiple Choice

1. Cardiovascular physiology:

a) The first heart sound indicates the start of isometric contraction.

b) In heart failure increasing heart rate will improve myocardial oxygenation.

c) Cardiac output (CO) = Heart rate (HR) x Systemic Vascular Resistance (SVR).

d) Diabetes mellitus (DM) may give rise to an abnormal Valsalva response.

e) Pulmonary artery (PA) catheter measurements are reliable in mitral stenosis.

2. Breathing circuits:

a) The Mapleson A system is efficient during controlled ventilation.

b) During spontaneous ventilation, the Mapleson A system requires a fresh gas flow (FGF) of 150ml/kg/min.

c) During controlled ventilation a Bain circuit requires a FGF of 70-100ml/kg/min.

d) During spontaneous ventilation a Lack circuit will conserve dead space gas.

e) The Jackson-Rees modification of the Ayres T piece has a closed bag at the end of the expiratory limb.

3. Circle systems:

a) Fresh soda lime contains mainly calcium carbonate.

b) Fresh soda lime contains no water.

c) Plenum vaporisers cannot be used in the circle due high internal resistance.

d) A circle system contains 2 one way valves.

e) Circle systems are economical because low flows can be used from the start of a procedure.

4. Trauma:

a) All trauma patients should have their airway assessed and secured before having a long bone fracture reduced.

b) A patient who opens their eyes, withdraws their arm and groans to pain has a Glasgow coma score (GCS) of 11.

c) A patient with suspected extradural

haematoma and a positive diagnostic peritoneal lavage (DPL) should have an urgent neurosurgical opinion before any further intervention.

d) All trauma patients who are intubated should have a nasogastric tube passed.

e) Management of a tension pnemothorax should include chest X ray (CXR) before needle decompression.

5. *Ophthalmic anaesthesia:*

a) The oculo-cardiac reflex is mediated by the sympathetic nerve supply.

b) Suxamethonium is absolutely contraindicated in penetrating eye injury.

c) An intra-ocular pressure (IOP) of 25mmHg is normal.

d) Patients with myopia have greater risk of orbit puncture with peribulbar blocks.

e) Ketamine is an appropriate induction agent in a penetrating eye injury.

6. *Renal physiology:*

a) Renal blood supply is normally 10% of cardiac output.

b) The juxtaglomerular complex produces angiotensin.

c) Aldosterone promotes potassium (K^+) excretion in the proximal tubule.

d) Atrial nautrietic peptide (ANP) blocks the effect of aldosterone.

e) Erythropoietin production is increased in hypoxia.

7. *Paediatric physiology:*

a) Infants have a lower functional residual capacity (FRC) than adults.

b) Stroke volume is relatively fixed.

c) An appropriate maintenance fluid requirement for a 26kg child would be 46mls/hr.

d) Infants have a lower closing volume than adults.

e) Alveolar minute ventilation (MV) is approximately 60ml/kg/min.

8. *Paediatric anaesthesia:*

a) In spontaneous respiration with an Ayres T piece, a FGF of 2-3 x minute volume is required.

b) An appropriate resuscitation dose of fluid is 10mls/kg.

c) Thiopentone can be given by intraosseous injection.

d) Pyloric stenosis is a surgical emergency and should be operated on as soon as is possible.

e) The maximum dose of bupivacaine is 2mg/kg per 4 hours.

9. *Pre-operative assessment:*

a) A patient with 2:1 heart block should receive an atropine premed.

b) A morphine infusion is the best form of post-op analgesia in a patient for a gastrectomy with TB bronchiectasis.

c) Patients with oesophageal reflux should receive a rapid sequence induction (RSI).

d) Patients having a thyroidectomy should have a CXR.

e) Patients having non urgent surgery should be postponed by 6 weeks following an myocardial infarct (MI).

10. *Causes of electro-mechanical dissociation (EMD) include:*

a) Tension pneumothorax

b) Cardiac tamponade

c) Pulmonary emboli

d) Cardiac ischaemia

e) Hyperthermia

11. *The following are correct doses with respect to paediatric resuscitation:*

a) First dose adrenaline: 0.1ml/kg of 1:10,000

b) Second dose adrenaline:1.0ml/kg of 1:100,000

c) Atropine: 40mcg/kg

d) Initial defibrillation: 2 joules/kg

e) Bicarbonate: 1ml/kg of 8.4% solution

12. *The following inotropes are correctly matched with their receptors:*

a) Noradrenaline: $\partial 1$, ß

b) Isoprenaline: $\partial 1$, $\partial 2$

c) 1-2mcg/kg/min dopamine: ß

d) Salbutamol: ß 2

e) Adrenaline: $\partial 2$

13. **Ketamine:**

a) Acts at the NMDA receptor.
b) Is related to phencyclidine.
c) Acts in one arm brain circulation time.
d) Is a trigger for malignant hyperpyrexia (MH).
e) Increases post operative nausea and vomiting (PONV).

14. **The following will give rise to in increase in body sodium (Na+):**

a) Angiotensin I
b) Captopril
c) Anti diuretic hormone (ADH)
d) ANP
e) Fludrocortisone

15. **Concerning the neuromuscular junction (NMJ):**

a) Na^+/K^+ ATPase consumes 1/3 of the body's metabolic energy.
b) The acetylcholine (Ach) receptor has 5 subunits.
c) Ach binds to the ß subunit of the Ach receptor.
d) NMJ function is normal until 75-80% of receptors are blocked.
e) The resting membrane potential is -70mV.

16. **Immediate management of anaphylaxis should include:**

a) Oxygen
b) Adrenaline
c) Steroids
d) Antihistamines
e) Salbutamol

17. **The following are safe to use in patients taking monoamine oxidase inhibitors (MAOI's):**

a) Metaraminol
b) Pethidine
c) Ephedrine
d) Diclofenac
e) Paracetamol

18. **The following local anaesthetics are correctly paired with their maximum doses:**

a) Plain bupivacaine: 2mg/kg
b) Bupivacaine with adrenaline: 4mg/kg
c) Plain lignocaine: 6mg/kg
d) Lignocaine with adrenaline: 7mg/kg
e) Plain prilocaine: 6mg/kg

19. **The following local anaesthetics are amides:**

a) Bupivacaine
b) Lignocaine
c) Cocaine
d) Amethocaine
e) Chloroprocaine

20. **The following muscle relaxants are safe in a patient with a history of scoline apnoea:**

a) Atracurium
b) Mivicurium
c) Vecuronium
d) Pancuronium
e) Gallamine

21. **Pulse oximetry may be inaccurate in the presence of the following:**

a) Sickle cell disease
b) Methaemoglobinaemia
c) Nail varnish
d) Thalasaemia
e) Carboxyhaemoglobin

Short Answers

1. You give a general anaesthetic for a patient involved in a road traffic accident. The patient has a fractured femur and has bruising to the anterior chest from a seat belt, initial chest X-ray shows no significant injury. Intraoperative blood loss is high so a central line is inserted.

You are asked to see the patient in the recovery room with increasing shortness of breath. When you arrive the patient is dyspnoeic, hypotensive, tachycardic and when you examine the patient you notice decreased air entry unilaterally. A chest X-ray has already been taken:

a)   What is the diagnosis?

b)   What is your immediate management?

c)   What is your subsequent management?

d)   What are the possible causes of this pathology?

2. You are called to the recovery room to see a young patient who has had a minor ENT procedure. The recovery nurse has noticed a fast heart rate and an ECG has been performed:

a)   What does the ECG show?

b)   What physical manoeuvres can be performed to terminate this?

c)   What pharmacological methods can be used?

d)   If these fail what is the next step?

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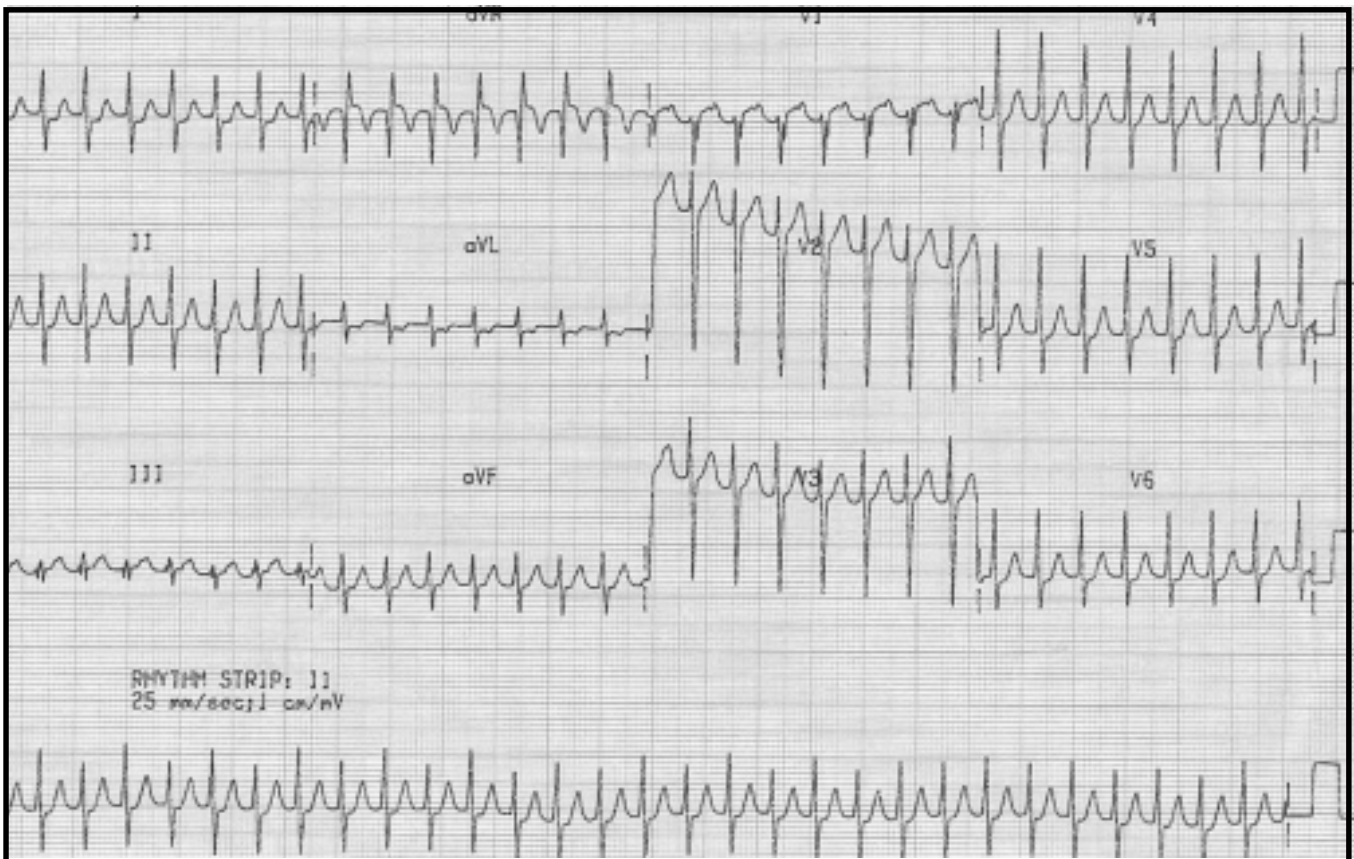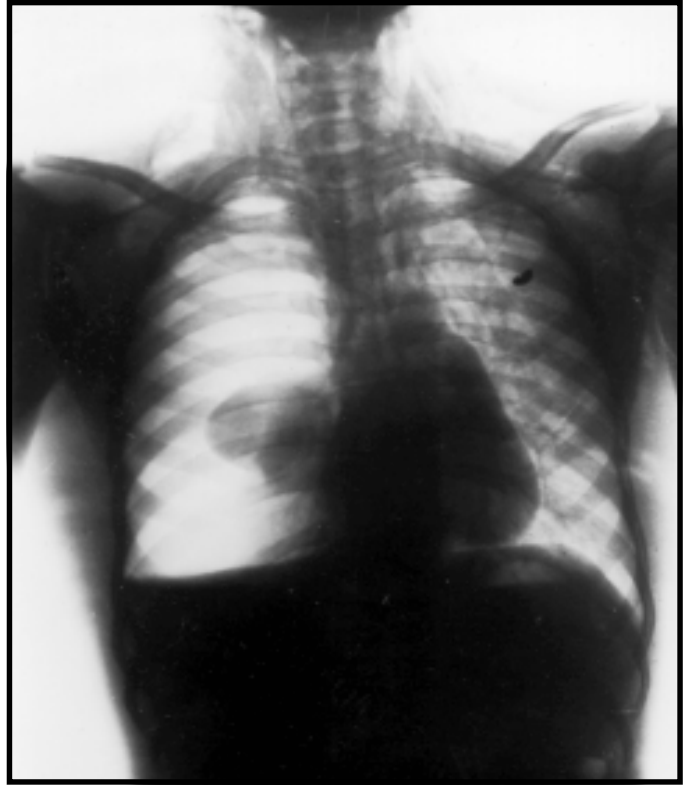
3. You are called to the recovery room to see a patient who has acutely deteriorated following peripheral vascular surgery. The patient is shocked and tachycardic, an ECG is performed:

a)   What is the diagnosis?
b)   What is the management?
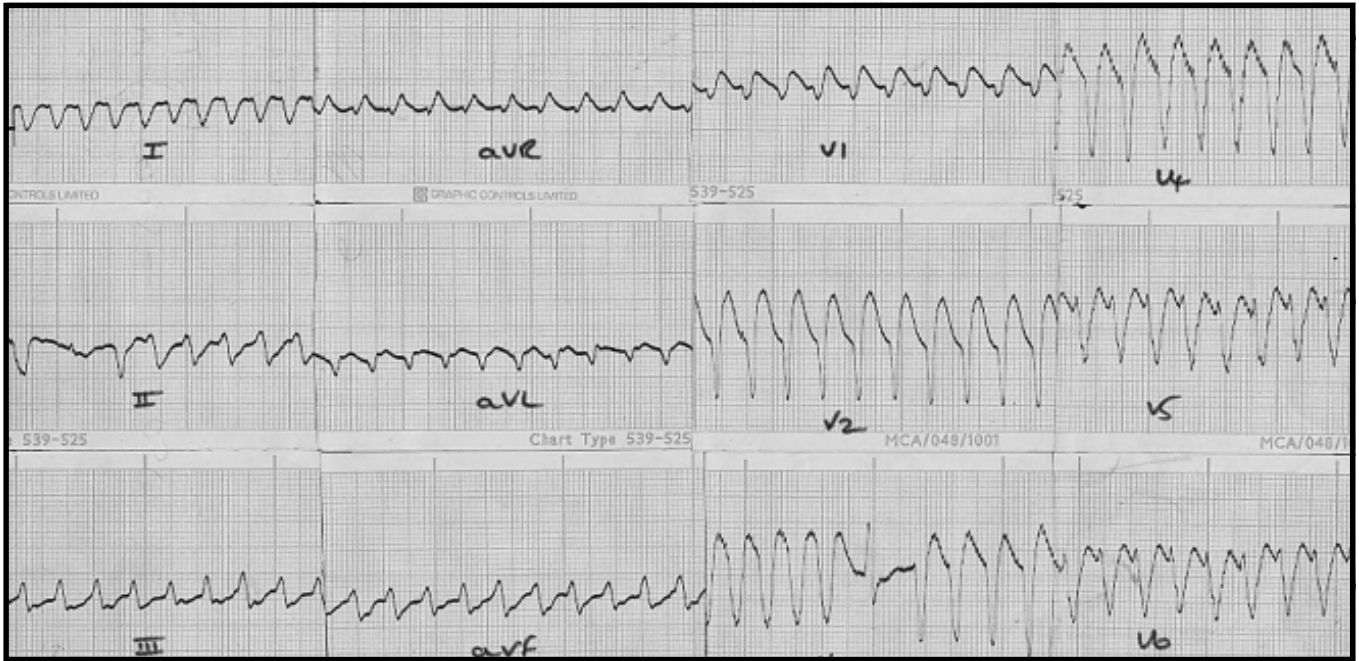
4. You induce a patient for a cholecystectomy and following induction the patient develops a tachycardia, a 12 lead ECG is performed:

a)   What is the diagnosis
b)   What are the possible underlying causes
c)   What are the treatment options