Multiple Choice Questions

Anaesthesia for interventional neuroradiology

1. ECG changes seen in subarachnoid haemorrhage include:
   (a). 1. ST elevation.
   (b). 2. A prolonged QTc interval (>440 ms in men, >460 ms in women).
   (c). 3. T-wave inversion.
   (e). 5. A prolonged PR interval (>0.2 s).

2. Regarding the management of cerebral aneurysmal disease:
   1. Endovascular coiling is the preferred choice of management in all aneurysms.
   2. Wide-necked aneurysms may require surgical clipping.
   3. The blood pressure target in unsecured cerebral aneurysms is a systolic blood pressure between 140 and 160 mm Hg.
   4. In patients who are experiencing vasospasm, triple H therapy (hypertension, hypervolaemia, haemodilution) should be instituted.
   5. Nimodipine can reduce the risk of delayed cerebral ischaemia.

3. Management of bleeding and vessel rupture includes:
   (a). Reversal of anticoagulation from heparin with protamine 1 mg per 1000 units of heparin given.
   (b). Inducing hypertension to maintain collateral flow.
   (c). Insertion of an external ventricular drain.
   (d). Craniotomy.
   (e). Radiological intervention of the ruptured aneurysm.

4. Regarding ionizing radiation in the angiography suite:
   (a). The inverse square law states that the dose of radiation increases with distance from the source.
   (b). Computed tomography (CT) of the head requires a higher radiation dose than CT of the chest.
   (c). All staff should wear lead aprons least 0.7 mm thick.
   (d). All female patients of child-bearing age should have a negative pregnancy test.
   (e). Fluoroscopy with digital subtraction angiography gives a dose of radiation equivalent to five chest X-rays.

Perioperative care of phaeochromocytoma

1. Regarding the clinical presentation of phaeochromocytomas:
   (a). The absence of hypertension reliably excludes a diagnosis of phaeochromocytoma.
   (b). Ten percent of phaeochromocytomas are found to be bilateral at presentation.
   (c). Hypoglycaemia is common at presentation.
   (d). They are more likely to occur sporadically rather than as a result of genetic inheritance.
   (e). The annual incidence rate of phaeochromocytomas in Europe is approximately 2 in every 100 000 people.

2. Regarding the diagnosis of phaeochromocytomas:
   (a). Homovanillic acid levels are used to diagnose solely dopamine-secreting tumours.
   (b). The likelihood of a false positive result in the biochemical diagnosis of phaeochromocytoma using plasma metanephrine levels is increased when the patient is concurrently taking amitriptyline.
   (c). Venesection for plasma metanephrines whilst the patient is in the sitting position reduces the specificity of the test.
   (d). Urinary metanephrine analysis has greater specificity than plasma metanephrine analysis and is therefore recommended as the first-line biochemical test in the diagnosis of phaeochromocytoma.
   (e). MIBG-123 scintigraphy is rarely indicated in the diagnosis of neuroendocrine tumours in the paediatric population.

3. Regarding patient optimization before phaeochromocytoma surgery:
   (a). Preoperative α blockade for phaeochromocytoma surgery should be titrated to achieve a systolic blood pressure of ≤160 mm Hg.
(b). Hypertrophic cardiomyopathy can occur as a result of chronic hypertension and is detected by transthoracic echocardiography.

(c). Common side effects of a blockade with doxazosin include somnolence, headache and nasal congestion.

(d). Phenoxybenzamine may result in postoperative hypotension as a result of its competitive mechanism of action at a receptors.

(e). Hypercalcaemia in association with a phaeochromocytoma suggests multiple endocrine neoplasia.

4. Regarding the intraoperative management of phaeochromocytomas:

(a). Esmolol is a good choice of agent for managing intraoperative hypertensive episodes because it has a rapid onset and offset of action.

(b). Haemodynamic instability most commonly occurs at time of capnoperitoneum.

(c). The risk of toxicity from sodium nitroprusside is low for an intraoperative infusion running at 7.2 mg h⁻¹ in a 60-kg patient with normal renal and hepatic function.

(d). Magnesium exerts its anti-arrhythmic effect by antagonism of myocardial sodium channels.

(e). Administration of succinylcholine at induction has a high risk of precipitating a hypertensive crisis.

4. The power of a study:

(a). Is the probability of finding an existing difference between groups.

(b). Is the probability of a type-I error not being made.

(c). Is usually set at 95% for most research.

(d). Is decreased by increasing the sample size.

(e). Can be increased for a given sample size by decreasing the specificity.

4. Regarding sample size estimations:

(a). The standardized difference is the ratio of the minimum clinical difference to the standard deviation.

(b). Loosely distributed data increase the power of a study.

(c). The Bonferroni correction reduces the risk of errors increasing when multiple hypotheses are tested.

(d). The smaller the minimum clinical difference, the smaller the sample required to detect it.

(e). A retrospective sample size calculation is useful if a significant difference has already been detected.

Anaesthesia for free flap breast reconstruction

1. Regarding autologous breast flap reconstruction:

(a). Latissimus dorsi flaps are the commonest free flap reconstruction.

(b). In free flap surgery, the donor tissue remains connected to the donor site via an intact vascular bundle and retains its blood supply through the procedure.

(c). Skin, fat and muscle can only be taken from the abdomen and lower limbs.

(d). Pedicled flaps involve a longer duration of surgery than free flaps.

(e). Deep inferior epigastric perforator (DIEP) flaps maintain muscle integrity and abdomen strength.

2. The following are absolute contraindications to deep inferior epigastric perforator (DIEP) surgery:

(a). Obesity.

(b). Age >65 years.

(c). Smoking.

(d). Sickle cell anaemia.

(e). Previous myocardial infarction.
3. The anaesthetic goals for deep inferior epigastric perforator (DIEP) free flaps include:
   (a). Ensuring the patient is normovolaemic.
   (b). Facilitating smooth emergence from anaesthesia.
   (c). Maintaining the haematocrit <30%.
   (d). Avoidance of the use of pharmacological vasoconstrictors to prevent compromise of flap blood flow.
   (e). Meticulous positioning, including ensuring abduction of the arms to >90° to avoid brachial plexus injury.

4. Regarding postoperative care after deep inferior epigastric perforator (DIEP) free flaps:
   (a). Clinical flap observations remain the most common method of assessing flap perfusion.
   (b). Maintenance of temperature is not important in the postoperative period.
   (c). Free flap failure is most commonly attributable to surgical complications.
   (d). Auditory transcutaneous Doppler is a useful monitoring device.
   (e). Arterial causes of flap compromise produce a cool, congested flap with slow capillary refill time.

**Severe community-acquired pneumonia**

1. Regarding the aetiology of severe community-acquired pneumonia (CAP):
   (a). Gram-negative bacilli are the most common pathogens isolated in patients requiring intensive care admission.
   (b). The incidence of penicillin-resistant Streptococcus pneumonia among intensive care patients is reducing.
   (c). Exposure to birds is a risk factor for Chlamydia pneumoniae.
   (d). High alcohol intake is associated with cavitating pneumonias.
   (e). Mycoplasma pneumonia is classically associated with skin pustules.

2. Appropriate statements regarding Staphylococcus aureus pneumonia include:
   (a). Positive microscopy for Staphylococcus aureus from aspiration of a pleural effusion is most likely to be due to contamination.
   (b). Standard antibiotic treatment for Staphylococcus aureus pneumonia should last for 5–7 days.
   (c). Community-acquired methicillin-resistant Staphylococcus aureus (CA-MRSA) is more likely to affect patients with multiple comorbidities.
   (d). The incidence of CA-MRSA infection is high among patients requiring admission to intensive care units.
   (e). Vancomycin is effective in targeting the Panton–Valentine leucocidin (PVL) toxin.

3. Concerning investigations in severe community-acquired pneumonia:
   (a). HIV testing should be considered if Streptococcus pneumoniae is isolated.
   (b). C-reactive protein (CRP) may be useful in differentiating between infectious and non-infectious causes of respiratory failure.
   (c). Legionella urine antigen testing currently only detects serogroup 1.
   (d). Raised D-glucan is indicative of infection with Mycobacterium tuberculosis.
   (e). No organism is detected in 15% of cases.

4. In immunocompetent patients diagnosed with severe community-acquired pneumonia:
   (a). Steroids should be started if the PaO2/FiO2 ratio is <150 mm Hg.
   (b). Non-invasive ventilation (NIV) may be considered.
   (c). In penicillin allergy, clarithromycin monotherapy is appropriate.
   (d). Addition of a fluoroquinolone should be considered.
   (e). Aerosolized ribavirin reduces the severity of disease.

**Sarcoidosis and anaesthesia**

1. In patients with sarcoidosis:
   (a). Angiotensin-converting enzyme (ACE) levels are useful for diagnosis.
   (b). Parotitis, uveitis, fever and facial palsy is a classic presentation.
   (c). Endobronchial ultrasound guided mediastinal lymph node biopsy is widely used for diagnosis.
   (d). The vocal cords are the most commonly affected part of the upper respiratory tract.
   (e). Stage I pulmonary disease describes adenopathy and parenchymal involvement.

2. Patients with cardiac sarcoidosis
   (a). Are often clinically unrecognized.
   (b). Rarely need pacemaker insertion.
   (c). Require preoperative echocardiography.
(d). Are at risk of sudden death.
(e). Commonly have changes of right ventricular hypertrophy and strain on ECG

3. Sarcoidosis can present with symptoms of:
   (a). Hyperkalaemia.
   (b). Hypernatraemia.
   (c). Hypercalcaemia.
   (d). Hypermagnesaemia.
   (e). Hypertriglyceridemia.

4. When treating sarcoidosis:
   (a). Steroids are curative.
   (b). Thalidomide can be used.
   (c). Leflunomide is known to cause renal toxicity.
   (d). Azathioprine acts as an antagonist of non-depolarizing neuromuscular blockers.
   (e). Perioperative steroid cover may be required.