Chemotherapy-induced peripheral neuropathic pain

1. Chemotherapy-induced peripheral neuropathy (CIPN) is well recognized after systemic chemotherapy. Appropriate statements regarding the severity of CIPN include:

(a). The combination of the drugs used for chemotherapy may have a protective effect against CIPN.
(b). The severity is dependent on both the duration of the regimen and the dose of the chemotherapeutic agents.
(c). It is seen more frequently in male patients.
(d). The presence of pre-existing nerve damage and other neuropathic pain states increases the chance of severity of symptoms of CIPN.

2. Patients with chemotherapy-induced peripheral neuropathy (CIPN) may present with unique features depending upon the agent used. The following statements about the clinical features of CIPN are true:

(a). Coasting is a phenomenon seen at the cessation of chemotherapy treatment with platinum compounds.
(b). Pure motor neuropathy is not seen in CIPN.
(c). Sensory changes tend to resolve after cessation of chemotherapy.
(d). Pharyngo-laryngeal dysaesthesia is a potential complication with oxaliplatin chemotherapy.
(e). Use of vincristine chemotherapy in children can cause Guillain–Barré syndrome.

3. A 45-year-old company director has undergone bowel resection for colonic cancer and is undergoing the prescribed adjuvant chemotherapy. He is now having symptoms of chemotherapy-induced peripheral neuropathy (CIPN) and wants to know the cause of the pain as well as an explanation of his ongoing symptoms. The following statements are appropriate regarding the pathophysiology and diagnosis of CIPN:

(a). The dorsal root ganglion is often affected by the toxicity of the chemotherapeutic agents.
(b). Nerve conduction studies and electromyography are sensitive modalities to pick up early signs of CIPN.
(c). Impairment of vibration sense, proprioception and two-point discriminatory sensations are the most sensitive neurological signs.
(d). WHO (World Health Organization), ECOG (Eastern Cooperative Oncology Group) and National Cancer Institute common toxicity criteria (NCI-CTC) grading tools are widely used to grade CIPN as they are consistent and reliable.
(e). Apoptosis is the main mechanism by which both vinca alkaloids and taxanes cause toxicity.

4. A 56-year-old schoolteacher was referred to the pain clinic with established chemotherapy-induced peripheral neuropathy (CIPN) after being in remission for 2 years after treatment for ovarian cancer. She is keen to go back to work but is unable to carry out her duties because of painful neuropathy of her hands and feet. She has been on several analgesics, including gabapentinoids, tricyclic antidepressants and opioids, but the side-effects were far more troublesome than the analgesic benefits. She is looking for treatment options that could help with her situation. The following statements are appropriate regarding treatment modalities:

(a). Duloxetine has been shown to be efficacious for managing painful CIPN.
(b). Topical treatments such as 8% capsaicin patches have been successfully used in managing symptoms of CIPN.
(c). Spinal cord stimulation is being used successfully in the management of CIPN.
(d). There is no role for acetyl-L-carnitine in this patient as she has established CIPN.
(e). Localized cooling, if given during the chemotherapy treatment, would have been successful in preventing CIPN.

Place of rapid sequence induction in paediatric anaesthesia

1. Correctly applied cricoid pressure:

(a). Is more difficult to achieve in children as the cricoid cartilage is smaller and more caudad compared with adults.
(b). Is effective at reducing gastric insufflation.
(c). Requires a force of 30 N in paediatric patients.
(d). Reduces lower oesophageal sphincter tone.
(e). Is more effective at occluding the oesophagus when the patient is over 8 years old compared with younger children.

2. Preoxygenation:
(a). Is more effective when administered in at least 20 degrees of head-up position.
(b). Efficacy can be estimated by the inspired oxygen fraction.
(c). If effective, can result in 100% oxygen in the alveoli.
(d). Prevents desaturation in children.
(e). Should not be attempted in children as it might cause them to cry, become irritable and therefore use more oxygen, causing them to desaturate faster.

3. In a classical rapid sequence induction:
(a). Succinylcholine provides better intubating conditions than rocuronium.
(b). Children need a lower dose of succinylcholine because of an immature neuromuscular junction.
(c). Succinylcholine is the agent of choice as it can be relied upon to wear off before desaturation occurs.
(d). For children, the use of atropine should be included to prevent bradycardia.
(e). Hypoxaemia is more common in adults than children.

4. In a controlled rapid sequence induction (cRSI):
(a). Ventilation of the lungs is not attempted before intubation.
(b). Atracurium is used.
(c). A nerve stimulator should be used.
(d). Cricoid pressure is applied after induction of anaesthesia
(e). There are fewer complications compared with classical rapid sequence induction.

**Perioperative care of children and young people with diabetes**

1. The following recommendations are appropriate with regard to capillary blood glucose (CBG) in children in the perioperative period:
(a). Aim for a CBG <10 mmol litre−1.
(b). Aim for a CBG in the range of 5–16 mmol litre−1.
(c). Active treatment to lower CBG should be initiated only when the value is above 20 mmol litre−1.
(d). Active treatment should be initiated when CBG is below 5 mmol litre−1.
(e). CBG should be monitored hourly in young children (<3 years of age).

2. Perioperative management of children with diabetes includes:
(a). Admitting children several days before planned surgery to start an insulin infusion.
(b). Immediate surgical intervention in unplanned admissions to prevent metabolic complications triggered by the surgical pathology.
(c). Starting the child on variable-rate insulin infusion for unplanned surgery.
(d). Careful discussion and agreement of a perioperative plan with the surgical and paediatric team, as well as the child and family.
(e). Allowing diabetic children to eat and drink according to the normal 2/4/6 rule before planned surgery and return to a normal diet and insulin as soon as possible.

3. A 12-year-old boy is scheduled for a circumcision. He is a longstanding, well-controlled type 1 diabetic maintained on an insulin pump/continuous subcutaneous insulin infusions. He has no other comorbidities. Appropriate perioperative management includes:
(a). Stopping the pump if clinicians are unfamiliar with it.
(b). Continuing at the usual basal infusion rate.
(c). Cessation of the infusion if the procedure exceeds an hour.
(d). Insertion of a new subcutaneous catheter to ensure its integrity.
Multiple Choice Questions

3. Avoidance of regional anaesthetic techniques because of increased risk of nerve injury.
4. In diabetic ketoacidosis:
   (a). Children are dehydrated and should be aggressively fluid-resuscitated.
   (b). Rapid correction of capillary blood glucose should take place to avoid further complications.
   (c). Regular bloods should be rationalized in children as they cause further stress.
   (d). Avoid hypotonic fluids and introduce low-dose insulin after initial rehydration.
   (e). Fluids containing dextrose should be avoided because hyperglycaemia is already present.

Anaesthetist’s guide to the Coroner’s Court in England and Wales

1. The coroner:
   (a). Is an independent judicial officer.
   (b). Is appointed by the chief coroner.
   (c). Can be a medically or legally qualified individual.
   (d). Has a fixed-term contract.
   (e). Does not have the authority to order a post-mortem.

2. Deaths that must be referred to the coroner include:
   (a). Those occurring as a result of natural causes.
   (b). Those occurring at the deceased’s home.
   (c). Those that occur if the patient’s normal doctor (general practitioner) has seen them within 24 h before death.
   (d). Those that occur in prison or when the patient is detained under the Mental Health Act.
   (e). Those for which there are numerous possible causes.

3. Coroners:
   (a). Decide which cases are subject to a formal inquest.
   (b). Can decide which witnesses to call and what information is needed.
   (c). Can apportion blame to individual people who are involved in the death.
   (d). Cannot subpoena witnesses to attend the coroner’s court.
   (e). Can have the inquest findings overturned by the local authority or council.

4. With regard to inquests:
   (a). They are held in private.
   (b). Doctors attending inquests can be legally represented.
   (c). Properly interested parties (PIPs) have no legal rights at the inquest.
   (d). Forty percent of deaths reported to the coroner result in an inquest taking place.
   (e). The coroner can make recommendations after an inquest to any relevant body or organization via a ‘Rule 28’ letter and the recipient can choose whether to reply or not as he or she sees fit.

Platelets for anaesthetists—part 1: physiology and pathology

1. The following statements are true regarding platelets:
   (a). The normal lifespan of platelets is about 120 days.
   (b). Thrombopoietin production increases when there is a reduction in the number of circulating platelets.
   (c). Platelets synthesize several glycoproteins when activated.
   (d). Pluripotential haematopoietic stem cells are precursor cells for platelets.
   (e). About one-third of platelets are stored in the liver.

2. Appropriate statements regarding platelet adhesion and activation include:
   (a). Von Willebrand factor (vWF) is essential for platelet adhesion in high shear conditions.
   (b). Adenosine diphosphate (ADP) acts through surface-bound G-protein-coupled receptors.
   (c). Thromboxane A2 (TXA2) acts by binding to a receptor inside the platelets.
   (d). Prostacyclin promotes platelet aggregation.
   (e). Glycoprotein (GP) IIb–IIIa is essential for platelet aggregation.
3. The following statements are appropriate in relation to qualitative platelet disorders:
   (a). Type 1 von Willebrand disease is the most severe form of the disease.
   (b). Desmopressin is a useful agent in the management of von Willebrand disease.
   (c). Bernard–Soulier syndrome is caused by defects in platelet adhesion.
   (d). Patients with von Willebrand disease characteristically have a prolonged bleeding time and a prolonged activated partial thromboplastin time.
   (e). Patients with Glanzmann’s thrombasthenia will have a normal platelet count.

4. Appropriate statements regarding the assessment of platelet count and function include:
   (a). The Platelet Function Analyser (PFA-100) can be used to assess the efficacy of haemostatic agents like desmopressin.
   (b). An automated Coulter count method is accurate even if there is platelet clumping.
   (c). The VerifyNow® assessment of platelet aggregation response to ADP and arachidonic acid determines the platelet aggregation response to clopidogrel but not aspirin.
   (d). A flow cytometry-based platelet count analyser can be used to estimate platelet counts in patients with gestational thrombocytopenia because they have abnormally small platelets.
   (e). Light transmission aggregometry is a type of point-of-care testing method for platelet function.

Platelets for anaesthetists: Part 2: pharmacology

1. Appropriate statements regarding first- and second-generation thienopyridines include the following:
   (a). Clopidogrel is a prodrug.
   (b). Clopidogrel causes reversible inhibition of the adenosine diphosphate (ADP) receptor.
   (c). Ticlopidine is more potent than clopidogrel in the inhibition of the ADP receptor.
   (d). They may cause thrombocytopenia.
   (e). When taken orally, clopidogrel has greater than 90% bioavailability.

2. Appropriate statements regarding third-generation thienopyridines include the following:
   (a). Like that of clopidogrel, the efficacy of prasugrel is determined by the genetic variation of the cytochrome enzyme system.
   (b). Prasugrel is safe in patients with history of stroke or transient ischaemic attack (TIA) and stroke.
   (c). Ticagrelor is a new intravenous ADP receptor antagonist.
   (d). The mechanism of action of ticagrelor is by preventing the binding of ADP to its receptor.
   (e). After discontinuation of cangrelor, platelet function returns to normal within 2 days.

3. The following statements regarding antiplatelet agents are true:
   (a). Vorapaxar is a selective glycoprotein (GP) IIb/IIIa antagonist.
   (b). GP IIb/IIIa receptor antagonists are given as infusions.
   (c). Vorapaxar has a half-life of 24 h.
   (d). Eptifibatide is a protease-activated receptor (PAR-1) antagonist.
   (e). Transient dyspnoea is a side-effect of cangrelor.

4. The following statements regarding the safety of neuraxial blocks in patients treated with antiplatelet agents are true.
   (a). Aspirin and dipyridamole should be stopped at least 5 days before neuraxial techniques are used.
   (b). Neuraxial block can be performed in patients who have received clopidogrel within the last 24 h, after administering a pool of platelets.
   (c). It is safe to perform a neuraxial technique in a patient who stopped taking vorapaxar 5 days ago.
   (d). Antiplatelet agents can be administered safely in patients who have an epidural in situ, provided 6 h has elapsed since the placement of the epidural catheter.
   (e). Six hours is an acceptable time after spinal block or epidural catheter removal to safely administer the next antiplatelet drug dose.