

QUESTIONS AND ANSWERS TO ABA PART 1 TUTORIAL

1.

A 40-year-old man requires brief surgical relaxation after administration of neostigmine and glycopyrrolate for reversal of vecuronium-induced neuromuscular blockade. Succinylcholine 1 mg/kg is administered intravenously. Compared with a patient who has not had prior reversal of neuromuscular blockade, which of the following characterizes the succinylcholine blockade in this patient?

- A. Greater antagonism with calcium chloride
- B. Slower onset
- C. Less profound
- D. Less likelihood of phase II neuromuscular blockade
- E. Prolonged duration

2.



The plasma concentration of an intravenously administered drug follows the two-compartment kinetic model shown in the above graph. Which of the following events is illustrated by the decline in plasma concentration shown at Time #2?

- A. Decreasing activity of the drug at its receptor site
- B. Distribution from plasma to tissue
- C. Elimination of the drug from plasma
- D. Increasing volume of distribution
- E. Redistribution from vessel-rich groups to vessel-poor groups

3.

Following maternal epidural injection, fetal exposure to chlorprocaine is lower than fetal exposure to bupivacaine for which of the following reasons?

- A. Chlorprocaine is metabolized by plasma cholinesterase
- B. Chlorprocaine is more protein bound
- C. Chlorprocaine is not readily absorbed from the epidural space
- D. The ionized fraction of chlorprocaine in the fetal circulation is smaller
- E. The pKa of chlorprocaine is less than that of bupivacaine

4.

A 75-year-old man in the PACU complains of severe pain following thoracotomy. Respiratory rate is 30/min; arterial blood gas values are PaO_2 70 mmHg, PaCO_2 56 mmHg, and pH 7.28 at an FiO_2 of 0.6. The patient has a thoracic epidural catheter and received epidural morphine 2 mg 45 minutes earlier. Which of the following is the most appropriate immediate management?

- A. Intravenous administration of naloxone
- B. Epidural administration of additional morphine
- C. Epidural administration of 0.125% bupivacaine
- D. Epidural administration of fentanyl
- E. Intubation of the trachea

5.

A 32-year-old man is scheduled for hernia repair. He underwent heart transplantation for cardiomyopathy five years ago. Which of the following findings is most likely?

- A. Absence of coronary atherosclerosis
- B. Biventricular hypokinesis on echocardiography
- C. Down-regulation of cardiac beta-adrenergic receptors
- D. Increased heart rate at rest
- E. Right ventricular hypertrophy

6.

Phantom limb pain is an example of which of the following types of pain?

- A. Central pain
- B. Nociceptive pain
- C. Psychosomatic pain
- D. Sympathetically mediated pain
- E. Vasospastic pain

7.

A 70-year-old man has a pacemaker set at VOO mode at 70 bpm with temporary atrial and ventricular wires placed prior to separation from cardiopulmonary bypass. Fifteen minutes after separation, he develops atrial fibrillation with a ventricular response of 80 to 100 bpm. Which of the following ECG findings is most likely?

- A. Irregular atrial and ventricular complexes with loss of pacer artifacts
- B. Irregular ventricular complexes with preserved ventricular pacer artifacts at 70 bpm
- C. Occasional pacer artifacts when intrinsic ventricular rate is slower than 70 bpm
- D. Regular ventricular complexes at 70 bpm
- E. Ventricular complexes with preserved atrial and ventricular pacer artifacts at 70 bpm

8.

A 62-year-old woman with obesity and type II diabetes mellitus is scheduled to undergo vitrectomy of the right eye. Five minutes after retrobulbar injection with 0.75% bupivacaine 4 mL and intravenous administration of fentanyl 50 mcg and midazolam 1 mg, she is apneic and unresponsive. Which of the following is the most likely cause?

- A. Fentanyl-midazolam interaction
- B. Hypoglycemia
- C. Intravenous bupivacaine
- D. Retrobulbar hematoma
- E. Subarachnoid bupivacaine

9.

Four hours after open cholecystectomy, a patient who is breathing spontaneously has an SpO₂ of 93% in the supine position and an SpO₂ of 98% when placed in the head-up position. The most likely cause of this change is an increase in which of the following?

- A. Functional residual capacity
- B. Minute ventilation
- C. Pulmonary blood flow
- D. Residual volume
- E. Vital capacity

10.

A 62-year-old man is undergoing elective coronary artery bypass grafting and aortic valve replacement for three-vessel coronary artery disease and aortic stenosis. Shortly after intubation, heart rate increases from 75 bpm to 100 bpm and blood pressure decreases from 130/70 mmHg to 70/40 mmHg with acute, severe ST-segment depression in lead V5. Which of the following is the most appropriate management?

- A. Crystalloid
- B. Ephedrine
- C. Esmolol
- D. Nitroglycerin
- E. Phenylephrine

11.

After receiving an axillary block for carpal tunnel release, a patient has pain on incision. Which of the following nerves should be blocked at the level of the elbow to relieve the pain?

- A. Intercostobrachial
- B. Median
- C. Musculocutaneous
- D. Radial
- E. Ulnar

12.

A 68-year-old patient is undergoing total hip replacement during general anesthesia using positive pressure ventilation and neuromuscular blockade. Intraoperative monitoring shows a gradual decrease in end-tidal CO_2 , an increase in exhaled tidal volume, and an increase in measured FiO_2 . Which of the following is the most likely cause of these changes?

- A. Air entrainment around a deflated endotracheal tube cuff
- B. Channeling of the exhaled air through the carbon dioxide canister
- C. Fat embolism
- D. Inadequate muscle relaxation with spontaneous patient ventilation
- E. A small hole in the ventilator bellows

13.

You are called to anesthetize a patient for an emergency pericardial window for a large pericardial effusion. Which of the following drugs is most appropriate for initiation of anesthesia?

- A. Alfentanil
- B. Ketamine
- C. Midazolam
- D. Propofol
- E. Thiopental

14.

A parturient receives ketamine 2 mg/kg and succinylcholine 1.5 mg/kg for induction prior to elective cesarean delivery. Which of the following is most likely to be present in the newborn infant?

- A. Normal muscle tone
- B. Bradycardia
- C. Opisthotonos
- D. Respiratory depression
- E. Seizures

15.

Which of the following correctly describes the anatomic location of the stellate ganglion?

- A. Anterior to the transverse process of C5
- B. Anterior to the transverse process of C7
- C. Posterior to the prevertebral fascia
- D. Posterior to the vertebral artery
- E. Lateral to the carotid artery

16.

Which of the following is the greatest disadvantage of pressure-cycled ventilation?

- A. Increased I:E ratio
- B. Increased mechanical dead space
- C. Increased risk for barotrauma
- D. Variable respiratory rates
- E. Variable tidal volumes

17.

The jet ventilation technique using an injector during laryngobronchoscopy relies on:

- A. Air entrainment.
- B. Relative density of inhaled gases.
- C. Presence of an endotracheal tube.
- D. Presence of spontaneous ventilation.
- E. Use of helium-oxygen mixtures.

18. Which of the following postoperative treatments decreases the risk for deep venous thrombosis?

- A. Blood transfusion
- B. Epidural anesthesia
- C. Etomidate
- D. Ketorolac
- E. Patient-controlled analgesia

19.

Three hours after total thyroidectomy, a 33-year-old man develops inspiratory stridor. The most likely cause is:

- A. Hematoma formation.
- B. Tracheomalacia.
- C. Tetany.
- D. Recurrent laryngeal nerve injury.
- E. Superior laryngeal nerve injury.

20.

Following protamine administration, profound pulmonary hypertension is most likely initiated by release of:

- A. Epinephrine.
- B. Histamine.
- C. Leukotriene.
- D. Norepinephrine.
- E. Thromboxane.

21.

If administered prior to induction of anesthesia, which of the following drugs is most likely to cause tachycardia?

- A. Fentanyl
- B. Meperidine
- C. Midazolam
- D. Morphine
- E. Sufentanil

22.

A 60-kg 25-year-old woman is undergoing laparoscopy in the Trendelenburg position during general anesthesia. Five minutes after peritoneal inflation, the peak airway pressure required to deliver a tidal volume of 800 mL increases from 25 cmH₂O to 60 cmH₂O. SpO₂ decreases from 100% to 80% and systolic blood pressure increases from 110 mmHg to 140 mmHg. Which of the following is the most likely cause?

- A. Acute tension pneumothorax
- B. Excessively steep Trendelenburg position
- C. Excessive ventilator tidal volume setting
- D. Kink in the endotracheal tube
- E. Massive carbon dioxide embolism

23.

Compared with adults, neonates are more likely to become hypoxemic following anesthesia and extubation because of a relatively:

- A. Higher rate of oxygen consumption.
- B. Greater sensitivity to neuromuscular blockade.
- C. Larger VD/VT ratio.
- D. Lower blood pressure.
- E. Smaller functional residual capacity.

24.

Each of the following arterial blood gas determinations (A through F) was taken from a patient breathing room air. Match the blood gas determinations (A through F) to the patient clinical scenarios presented in the following 4 questions. Please note that each Arterial Blood Gas determination (A through F) may be selected more than once

Arterial Blood Gases

	pH	PaCO ₂	PaO ₂
A	7.39	41	59
B	7.55	24	57
C	7.18	27	93
D	7.38	58	56
E	7.32	54	66
F	7.41	34	81

1. 40 year-old 150-kg man with untreated sleep apnea

- A. A
- B. B
- C. C
- D. D
- E. E
- F. F

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2. 46 year-old man with idiopathic pulmonary fibrosis

- A. A
- B. B
- C. C
- D. D
- E. E
- F. F

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3. Healthy 22 year-old woman at 39 weeks gestation

- A. A
- B. B
- C. C
- D. D
- E. E
- F. F

27.

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4. Healthy 20 year-old hiker who lives at sea level and has just completed hiking to an altitude of 14,000 feet

- A. A
- B. B
- C. C
- D. D
- E. E
- F. F